WIRED

THE WAR MACHINE

THE IMPOSSIBLE SEARCH FOR GAZA'S MISSING

+

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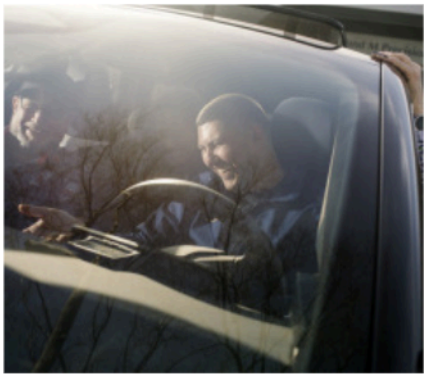

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ON THE COVERS

The first idea for the cover of our **War Machine** issue was something more conceptual, a line like "War Is Here" splashed across a stark illustration. War, in its many and ever-evolving forms, kind of feels like it's *everywhere* right now, both at home and abroad.

But as the photos started to come in, we realized we might have to rethink the cover. And that it might not just be one cover. It might be two, one for home, one for abroad. There's nothing conceptual about war, after all. It happens to real people, in real places—even as the technological forces at play would rather you forget that.

CLOCKWISE FROM TOP: ERIC RUBY; SEBASTIÁN HIDALGO; OMAR AL-QATTAA; ROB VARGAS

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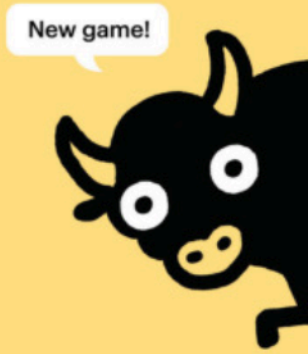

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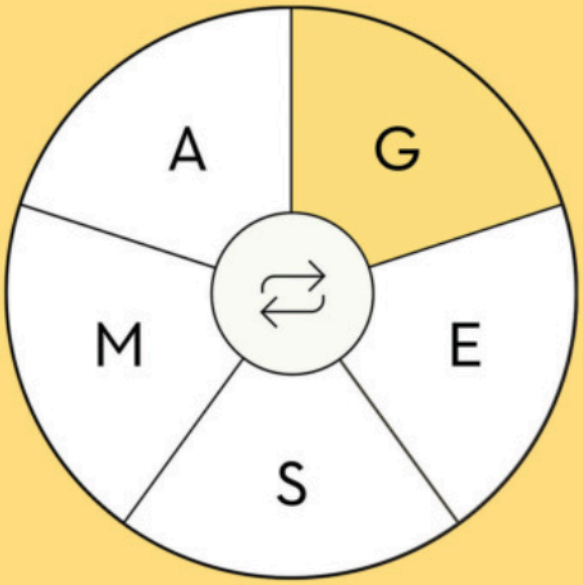

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TAREK MANSOUR IS BETTING (NOT GAMBLING!) ON THE FUTURE

The cofounder and CEO of Kalshi believes prediction markets don't just make people money—they also help society.

BY STEVEN LEVY / EDITOR AT LARGE | PHOTOGRAPHS BY AMY LOMBARD

THE BIG INTERVIEW

IF YOU PICKED Seattle to win Super Bowl LX, there were multiple means to turn your hunch into cash. You could place a wager on a betting site like DraftKings. Or you might risk the same amount of money by taking a position in the prediction market known as Kalshi. In both cases you would have been rewarded.

But according to Tarek Mansour, Kalshi's CEO, those two acts are completely different. Kalshi is not a gambling site, Mansour says. It's a marketplace, one regulated by the Commodity Futures Trading Commission. It's also a startup, and securing that regulatory approval might be its most impressive innovation. Kalshi is allowed to operate in all 50 states, 20 more than allow online sports betting, and it offers markets not only on sports and election results but also on a dog's breakfast of events including tomorrow's temperature in Philadelphia, Taylor Swift's wedding date, and whether Elon Musk will start a Bluesky account before 2027. One might note that some of those categories are, well, prone to manipulation by inside players.

This hasn't stopped Kalshi's growth, which has skyrocketed since it officially opened election markets in October 2024. The company has opened thousands of markets, handles over $1 billion in trades every week, and was most recently valued at $11 billion. (No surprise that *kalshi* is the Arabic word for "everything.") Nineteen states, meanwhile, have filed suit against Kalshi, challenging the claim that its operations aren't gambling and don't fall under their betting laws.

All of this is quite a jump for Mansour, a self-described math kid with mild OCD who was born in California, grew up in Lebanon, and met his cofounder, Brazilian-born Luana Lopes Lara, at MIT. Though the decision to labor through regulatory hoops before launch was risky, it paid off better than any bet made on Kalshi. Mansour also insists Kalshi provides a social good, one that unearths better information more than it builds a financial juggernaut.

One need not risk money in its "event contracts" to observe how quickly the wisdom of the Kalshi-verse can assess the likelihood of a given outcome. Kalshi's marketplace beat the polls in predicting both Donald Trump's reelection and Zohran Mamdani's primary win in the New York City mayoral race. On the other hand, Mansour admits that the Kalshi market on the next pope gave Leo XIV a meager chance of generating white smoke.

When I met Mansour at Kalshi's headquarters in Lower Manhattan, I found him engagingly combative. Four years of dealing with regulators and filing lawsuits honed his skills as a verbal warrior. Facing down critics who claim he's turning reality into a betting parlor only sharpened those skills. Mansour enthusiastically took on the challenge of convincing me that a Kalshi Super Bowl position is not the same thing at all, no sir, as a straight bet on FanDuel. Putting down money on what song Bad Bunny would sing first at halftime, he argues, is no different than buying Tesla stock or life insurance. Kalshi will have to set the market on whether or not he persuaded me. I can't predict the future.

This interview has been edited and condensed for clarity.

STEVEN LEVY: What led you, a kid from Lebanon, to start a prediction market?
TAREK MANSOUR: One of the defining characteristics of Lebanon is that there's a lot of uncertainty. There was much more certainty in math than in the outside world. My obsession was to get into MIT. A lot of people there were going into finance, which is a very good application of math, so in 2016 I went to work at Goldman. That was my first time coming in touch with the idea of prediction markets. The vast majority of the demand that summer was, will Brexit happen or not? When Brexit came, it was a massive shock; it completely destabilized markets. So I asked, "What if people could price these simple questions about the future?"

I'm old enough to remember when it was shocking to compare Wall Street to a betting parlor. Now it's taken for granted that valuations are different from profits and losses and are more like speculations on price itself. Kalshi is like an uncut version of that, one based on pure speculation.
Do you think pricing Brexit and knowing whether Brexit is going to happen or not is useful?

Why put a price on whether Brexit happens? Why not actually invest or go short on the actual stocks?
I completely disagree with that premise. People that had to immigrate from Britain or into Britain because Brexit happened would have really benefited from having that forecast. The idea that what's going to happen in the world only matters because of how it impacts stock prices is a bit bizarre to me.

You're the one who's saying you get clarity through a market.
It's actually the only way to get clarity. Yes, you can research a company and figure out where the stock of Apple is going to go. You can research where commodity prices are going to go, and you can research what the weather is going to be tomorrow. All financial markets have speculation. There are people that may not do as much research as others but do it because they find it interesting or fun.

But you're extending this beyond financial results.
Yes, you are risking money to make money on something you don't control. That is the definition of a bet. Could you use the word *bet* to bet on the stock market?

Probably. But we regulate gambling bets differently.
Gambling is tied to something artificially created for the purpose of entertainment, like rolling dice.

We're not talking about dice rolls. We're talking about speculating on the Super Bowl. That's gambling.
Sports is an event that exists whether or not there's going to be trading on it. With gambling, the company is the house. Its revenues are equal to the customers' losses. But in a financial market, there is no house. [Kalshi takes a fee, and the outcomes of events don't affect its revenues.]

No matter what mechanism, there's still a bet made. Maybe you are offering a better deal. As far as the customer is concerned, it's as if your casino is offering better odds.
Better prices is a good thing for society. Our customers are more sharp. They love doing analysis on the economy, and they like the idea that on Kalshi you have to be smarter than your neighbor—you're not smarter than some sort of system that's stacked against you. How are you going to beat the large hedge funds today on trading stocks? And the answer is, you probably won't. On Kalshi, there's a level playing field. If you have studied a lot about things like inflation, or Covid, or culture, or Taylor Swift, or sports, you have an advantage.

Gamblers also think research gives them an edge. People on Kalshi are risking real money, and that can have financial consequences.
The CFTC has an extremely comprehensive customer protection regime, and it has existed for decades. You see fewer issues with those markets, even though they're inherently riskier than what you see in sports betting. It's easy to criticize Kalshi because we're growing so fast. But we started in 2018 and didn't launch until four years later, because we wanted to get regulated up front.

"Markets don't lie like people do. When people put money on the line, they stop lying. It's amazing."

It's like you hacked the system to get regulated.
Hacked? That seems like we did something wrong! Are we getting punished now for going regulated?

I don't use the word in a pejorative sense. I wrote a book about good hackers!
We, as 22-year-old cofounders, said we want to do things right. We wanted to make it safe and do it responsibly, because we wanted to do it for the long term. Coverage of Kalshi misses that, because all of our competitors didn't do any of that.

Donald Trump Jr. is a paid Kalshi adviser. Why did you hire him when he's not only an adviser to your key competitor, Polymarket, but an investor as well?
Yes, he's an investor in Polymarket, and that's a testament that he's a pro-prediction-markets person. He was very clear up front that he had unequivocally zero involvement in regulatory or government [actions involving Kalshi].

What about markets where the outcome is known, but only by a few people. For instance, you could bet on who's winning the 50th season of *Survivor*. That's already in the can. Would you be able to identify if someone tells their cousin who the winner is and that person goes to Kalshi?
If people felt like the system was rigged, they would stop trading. We have the same rules as the stock market. If you commit insider trading on Kalshi, you're committing a federal crime.

Some worry it promotes the idea that each event is an opportunity to bet.
If people want to use Kalshi, we're providing a way to use it safely and responsibly. If they don't, then great. Who are we to decide?

You seem to want many more people on Kalshi.
You don't innovate by retracting. I have a hard time with this notion that we are forcing this thing onto people.

You do know that some people think the phenomenon is toxic, don't you?
You should always have some degree of dissent, and people should be free to have their opinions. They make it feel like I'm walking around America with candy and saying, "Hey, 45-year-old kids, come to Kalshi!"

Maybe they're free to pick up some cigarettes, too?
I don't know what this has to do with cigarettes. I don't smoke, I don't really drink. I trade, which is very different. I can't trade on Kalshi unfortunately.

Do you make virtual trades in your head?
I try not to, but I do look at the markets a lot. If you talk to [our heavy users], you see their mental model of the world is honestly kind of amazing. They have found an exercise that is intellectually stimulating, that gets them more calibrated and objective about their views about the world, where the conversation is more like mathematics. It makes things less subjective and more objective. It depolarizes the conversation, and it helps us get to more truth.

In a society where truth is under attack, you say you're bringing truth to the world.
Yes. The belief here is that markets don't lie like people do. When people put money on the line, they stop lying. It's amazing. W

FOR FUTURE REFERENCE

DUMBEST PHONE

Kids are going wild for a new landline-like device called the Tin Can, even though they barely know how to use it.

IN LATE DECEMBER, the 21st to be exact, my friends Amos and Clara called me 17 times. On December 22 it was eight times. The calls were short—sometimes only 30 to 45 seconds, and they usually arrived when I was doing something important: working, grocery shopping, napping. "Hi Anna," one or both of them would say. "Hi!" I'd respond.

If anyone else called me that often I'd block their number. But Amos is 6 years old, and Clara is 9, and what happened is that on December 20, the siblings received a newly released, extremely old-school kids' phone for Hanukkah. And for the next week or so, the two of them couldn't stop calling. And I, for one, couldn't stop picking up.

The Tin Can, as it's called, came out last April and has sold more than 100,000 units without much paid advertising. It's basically a "dumb phone" that works over a Wi-Fi network—a landline without the line. It has no screen. Its surface has only buttons, a receiver, and a speaker. Unlike a kid's smartwatch or typical dumb phone, which adults might buy for logistical reasons—keeping tabs on a child's location, coordinating pickups—the Tin Can is more about getting kids to focus on voice. Using it, hearing it, holding conversations. (One user on X suggested, jokingly, that children start writing chain letters next.)

The standard Tin Can, which comes in four colorways and costs $100, looks like a candy-colored soup can. A "retro" model called The Flashback appears nearly identical to an old-school cradle phone and also retails at $100. Calls between Tin Cans are free, but the company charges $10 a month to call outside the Tin Can network. Parents set the hours for when calls can happen and add numbers to an approved caller list—only calls to and from those numbers go through.

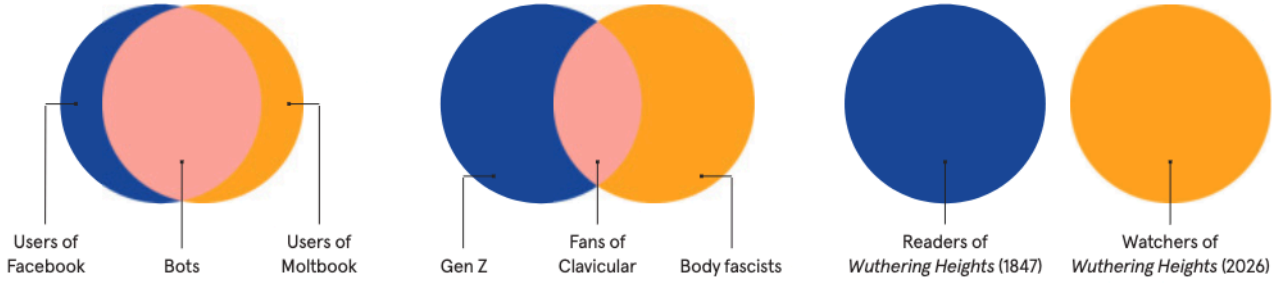
And that's about it. Tin Cans don't show kids their missed calls or support text messaging. In an era of addictive, endless-scroll engagement, parents are discovering the appeal of letting a kid get lost in conversation.

CHET KITTLESON, 38, is the cofounder of Tin Can and a father of three kids, 10, 8, and 5. When he was a child, he says, the landline was "arguably the most successful social network of all time." Every house had one. Then came cell phones and smartphones. Direct lines to the internet. "And somewhere along the way we decided the landline

BY ANNA HOLMES

ILLUSTRATION BY MADELEINE LEBRUN

CHARTGEIST



was obsolete," Kittleson says. "In doing that, we overlooked a group that was a major beneficiary of it: kids."

Kittleson, who guesses that most Tin Can users are between the ages of 5 and 13, tells me he wants to help create a "better childhood," or as he puts it, "a sense of independence and confidence." Mike Duboe, a partner at Greylock Ventures, which led a round that invested $12 million in the company in October, expressed a similar sentiment. One parent, describing their kid's Tin Can use on X, wrote that it "felt like the old days."

In late December, frustrated parents flooded the company's feedback forms and posted on Reddit that their Tin Cans weren't working. The Tin Can engineers had anticipated a surge around the holidays, but the hundredfold increase in call volume took them by surprise. When I ask Kittleson about the holiday meltdown, he winces. "It was a stressful Christmas," he concedes. He says that future shipments of the product will be staggered.

And the product's far from perfect: There can be echoes, unstable sound quality, and long pauses. The buttons on the device are hard to press, which can be challenging to little fingers like Amos'. His mother, Rebecca, says that she sometimes has to help him make calls. "It takes a little bit out of the independence of it," she says.

AT FIRST, AMOS and Clara played with their phone incessantly. They called and greeted me with a little "hi" and not much else. They didn't even say their name. It was on me to sustain the conversation. Did you know that, according to experts, rarely do 30 seconds pass without someone asking or answering a question? In other words, I quickly got sick of the sound of my own voice.

Yet it was clear that the kids were learning new social skills. Not only did Rebecca discover that she loved getting calls directly from her kids, she also began to notice that her daughter is funnier than she first realized.

"We're not privileged to get to hear our kids and their friends chatting with each other so much, what they talk about at school or when they're playing in a room with the door closed," Rebecca says. "And so it just feels fun to watch how they figure out how to interact and what makes them laugh."

Kittleson says his own kids have begun to "use their voice." (For example, when ordering food at a restaurant.) His experience, anecdotally and from watching kids use the product, is that girls are more likely to have longer conversations, whereas boys have more transactional exchanges like, "Can you play? OK, when?"

After a few weeks, Amos and Clara settled into the phone. Use shifted. Not only were they planning playdates, they were calling to check in with their similarly aged friends ("What are you doing now?") and having longer conversations.

And more polite ones. Kittleson told me about parents who reported that at first, their Tin Can–using kids sim-

YOUR NEXT …

▸ Subreddit

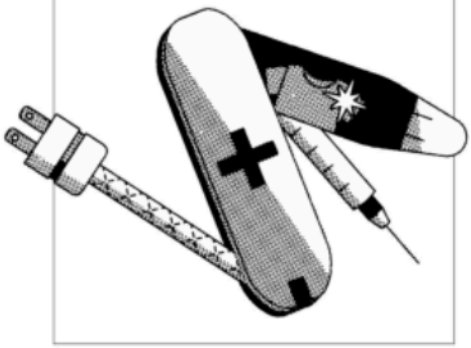
For most of us, doing laundry is a chore. For the freaks at r/laundry, it's an art form. Lurk long enough and you'll learn that not all detergent is created equal (lipase is necessary) and that an "intensive enzymatic reset" can salvage dingy sheets. That procedure's inventor, user KismaiAesthetics, is something of a spa god.

▸ Cord

They're foundational to modern living—yet so often banished to the shadows. Not anymore: High design has come for cables. Conway Electric makes visually stunning extension cords in baby blue and fire-engine red, while Counterpart's USB-C chargers look like small cakes. Now you can show off how wired you are.

▸ Injectable

Botox, fillers, platelet-rich plasma: Getting and maintaining Instagram face isn't cheap. That's why some people are now ordering Korean botox and injecting it themselves. Horrifying? Perhaps, but it's a quarter of the cost, and there's only a small risk of facial drooping.



"YOUR NEXT" ILLUSTRATION: JACQUI VANLIEW

FOR FUTURE REFERENCE

ply hung up when they finished talking. Claude Fischer, a sociologist at UC Berkeley, finds in this pattern echoes of adults' early use of telephones. When telephones entered domestic life in the 19th and 20th centuries, people had to be taught how to answer, how loudly to speak, how to end a conversation. Phone companies produced pamphlets and school materials on phone etiquette.

So why not get one of those original landlines? It's not so easy. Phone companies have no incentive to promote landlines; the money is in mobile. Plus, as Kittleson reminded me, landlines don't have features such as "Do not disturb" or approved caller lists, which blocks spam calls.

Of course, as with any kid tech, vulnerabilities have a way of popping up. But when I asked security expert Karsten Nohl, he told me that in this case concerns are limited and would "mostly manifest in the cloud, where the provider reserves the right to record conversations, which could potentially be accessed by third parties."

As a cultural icon, the Tin Can is nowhere near the status of the original landline. Orders have taken months to fulfill. And competitors are coming: This spring will see the release of the Pinwheel Home, which deems itself "the modern kids' landline." And what about creating a cohort of Tin Can haves and have-nots?

At first, Amos and Clara played with their phone incessantly. They called and greeted me with a little "hi" and not much else. They didn't even say their name.

Rebecca says that around 10 percent of the kids in Clara's and Amos' classes at their Los Angeles public school have the devices. Mike Duboe, the investor, tells me that inquiries from schools have come in about buying Tin Cans in bulk. When I ask him how—and why—this might work, he tells me that he imagines school administrators broadcasting announcements to kids as well as parents.

In mid-January, I sat down with Clara and Amos to hear how things were going. Who have they been calling? "Mostly my adult friends," Clara says. "I mostly call you." What do they say to people? "I'm just calling to say hi," Amos says. What have they learned? "You have to talk into the three dots," one of them says. "Sometimes my eardrum starts hurting," the other adds.

Amos tells me that he would like future Tin Cans to have little cameras and screens that show the other person.

"So, basically you're saying you want FaceTime," I say.

"Yeah," he replies.

A WEEK OR SO later, my phone began to go quiet. I'd gotten used to the flattery of being thought of and then—poof!—I was yesterday's news.

So I started calling *them*. When they picked up, the disappointment that I wasn't a school friend was sometimes palpable. "Hi, Anna," Clara would say. I didn't hear much excitement in her voice.

I couldn't take the suspense any longer: I asked her how often she was using her phone. About five calls a day, she told me.

"Yeah, I noticed that you don't call *me* as much," I said. I laughed a little, so that I would sound cheery and bright and unbothered. Embarrassed, I backtracked a bit. "Do you think you're bored with the phone?" I asked.

"No," Clara said.

"Hmm, maybe it's not that you're bored, you're *busy*," I offered.

There was a beat.

"Yeah," she agreed. "It's not that I'm bored. I'm *busy*."

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Basic	Cheugy	Mid
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De-alcoholized wine	Nonalcoholic beer	Alcohol

ANNA HOLMES *is a writer living in Los Angeles. Her third book,* The Power of No, *will be published this fall.*

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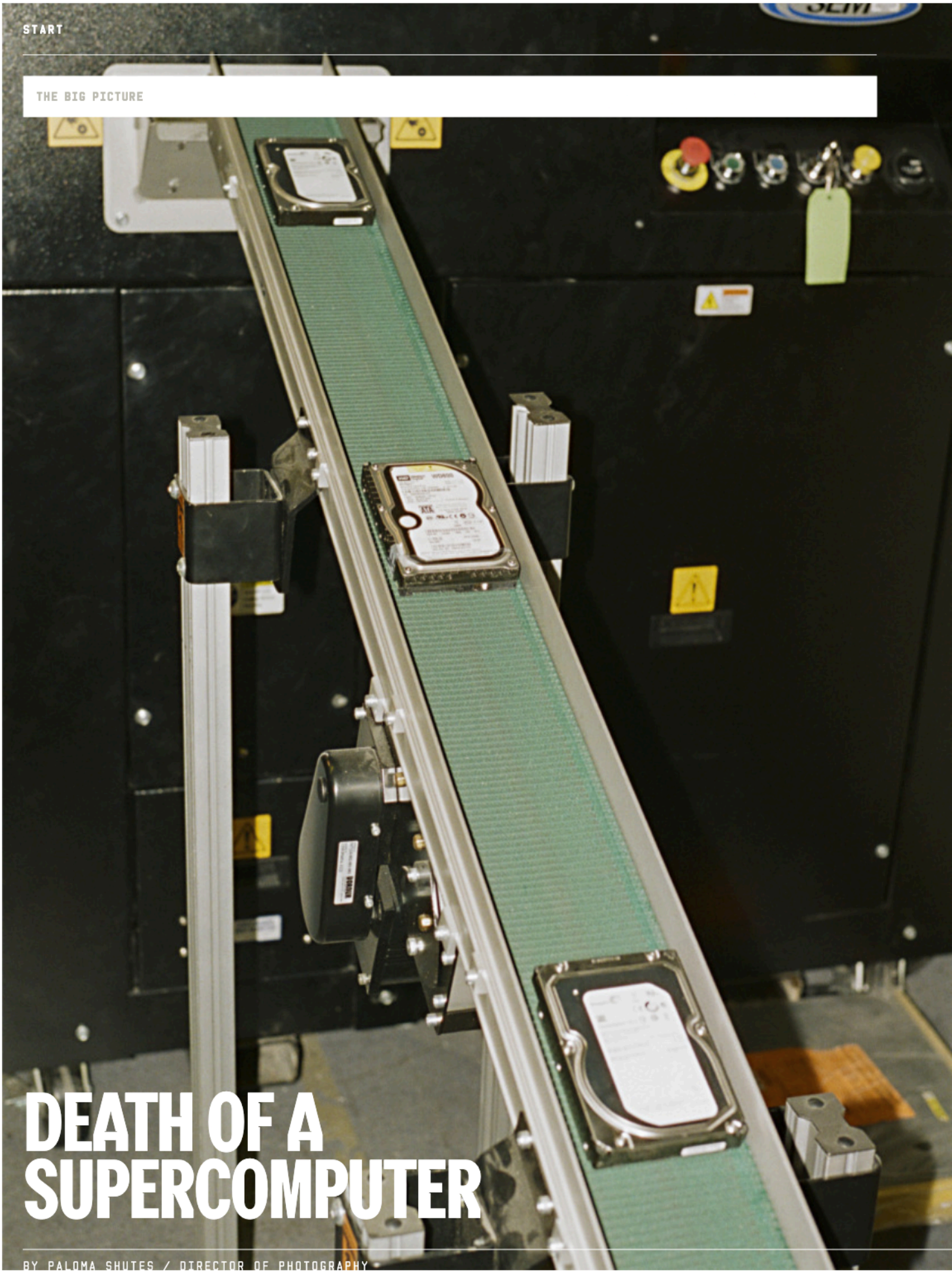
THE BIG PICTURE



DEATH OF A SUPERCOMPUTER

BY PALOMA SHUIES / DIRECTOR OF PHOTOGRAPHY

Earlier this year, Sierra the supercomputer was put to death. She was 7 years old, and because she ran top-secret nuclear simulations for the US government, the shutdown was violent. We wanted to document it in its entirety, from unplugging to recycling, but there was a problem: For security reasons, Sierra's minders at the Lawrence Livermore National Laboratory wouldn't let us use any equipment with Wi-Fi or Bluetooth capabilities. So our photographer, Balazs Gardi, brought along an analog film camera and other old-school gear instead. A former war photographer, he actually loved the constraints—and was so amazed by the precision and scale of the whole process that he returned to the lab a second time. Pictured here are Sierra's hard drives being shredded. For Gardi's other photos and the full story of Sierra's demise, read Rebecca Heilweil's story on WIRED.com.

PHOTOGRAPHS BY BALAZS GARDI

MACHINE READABLE

DON'T INHALE

COBOL is the asbestos of programming languages.

→ A regular column about programming. Because if/when the machines take over, we should at least speak their language.

EARLY IN THE Covid-19 pandemic, the governor of New Jersey made an unusual admission: He'd run out of COBOL developers. The state's unemployment insurance systems were written in the 60-year-old programming language and needed to be updated to handle the hundreds of thousands of claims. Trouble was, few of the state's employees knew how to do that. And the crisis went beyond New Jersey, just one of many states that depended on these unwieldy systems. By one rough calculation, COBOL's inefficiencies cost the US GDP $105 billion in 2020.

You might think New Jersey would have replaced its system after this—and that Covid was COBOL's last gasp. Not quite. The state's new unemployment system came with a number of quality-of-life improvements, but on the backend, it was still made possible by a mainframe running the ancient language.

COBOL, short for Common Business-Oriented Language, is the most widely adopted computer language in history. Of the 300 billion lines of code that had been written by the year 2000, 80 percent of them were in COBOL. It's still in widespread use and supports a large number of government systems, such as motor vehicle records and unemployment insurance; on any given day, it can handle something on the order of 3 trillion dollars' worth of financial transactions. I think of COBOL as a kind of digital asbestos, almost ubiquitous once upon a time and now incredibly, dangerously difficult to remove.

COBOL was first proposed in 1959 by a committee comprising most of the US computer industry (including Grace Hopper). It called for "specifications for a common business language for automatic digital computers" to

BY ZEB LARSON

solve a growing problem: the expense of programming. Programs were custom-written for specific machines, and if you wanted to run them on something else, that meant a near-total rewrite. The committee approached the Department of Defense, which happily embraced the project.

COBOL's design set it apart from other languages both then and now. It was meant to be written in plain English so that anybody, even non-programmers, would be able to use it; symbolic mathematical notation was added only after considerable debate. Most versions of COBOL allow for the use of hundreds of words (Java permits just 68), including "is, "then," and "to," to make it easier to write in. Some have even said COBOL was intended to replace computer programmers, who in the 1960s occupied a rarified place at many companies. They were masters of a technology that most people could barely comprehend. COBOL's designers also hoped that it would generate its own documentation, saving developers time and making it easy to maintain in the long run.

But what did it even mean to be readable? Programs aren't books or articles; they're conditional sets of instructions. While COBOL could distill the complexity of a single line of code into something anybody could understand, that distinction fell apart in programs that ran to thousands of lines. (It's like an Ikea assembly manual: Any given step is easy, but somehow the thing still doesn't come together.) Moreover, COBOL was implemented with a piece of logic that grew to be despised: the GO TO statement, an unconditional branching mechanism that sent you rocketing from one section of a program to another. The result was "spaghetti code," as developers like to say, that made self-documenting beside the point.

Plenty of computer scientists had issues with COBOL from the outset. Edsger Dijkstra famously loathed it, saying, "The use of COBOL cripples the mind; its teaching should, therefore, be regarded as a criminal offense." Dijkstra likewise hated the GO TO statement, arguing that it made programs nearly impossible to understand. There was a degree of real snobbishness: COBOL was often looked down on as a purely utilitarian language that was intended to solve boring problems.

Jean Sammet, one of the original designers, saw it differently—the language simply had the complicated task of representing complicated things, like social security. Or as another defender wrote, "Regrettably, there are too many such business application programs written by programmers that have never had the benefit of structured COBOL taught well." Good COBOL was indeed self-documenting, but so much depended on the specific programmer.

"The use of COBOL cripples the mind; its teaching should, therefore, be regarded as a criminal offense."

Fred Gruenberger, a mathematician with the Rand Corporation, put it this way: "COBOL, in the hands of a master, is a beautiful tool—a very powerful tool. COBOL, as it's going to be handled by a low-grade clerk somewhere, will be a miserable mess."

None of this stopped COBOL's widespread adoption, of course. That the Department of Defense put its finger on the scale and required COBOL compilers in most of the machines it ordered certainly helped. No computer manufacturer at the height of the Cold War wanted to miss out on those federal contracting dollars. In the end, COBOL succeeded at two of its most important goals: It was truly machine-independent and could proliferate rapidly. Its reliance on fixed-point and not floating-point arithmetic (if you know, you know) made COBOL ideal for financial applications, which is why it's everywhere in the financial sector.

But as New Jersey learned in 2020, updating COBOL for the modern age presents real challenges. Sammet admitted a key mistake in the early design: no "parameterization." Different parts of a program were broken into modules, but they couldn't pass data to each other, so they had to share everything, which meant that changes in one place could affect the whole program. Or cause millions of dollars to disappear in a flash. Or shut down people's Social Security payments.

Today, companies like IBM are trying to sell COBOL conversion tools that are powered by generative AI. (At one point, DOGE was promising to use one such tool to completely rewrite the Social Security Administration's codebase in a matter of months. The effort seems to have stalled.) But we may be caught in a bind. Simply converting COBOL to, say, Java results in "JOBOL," a confusing mishmash that mimics the structure of COBOL but with none of its readability. I'm not convinced by many of these AI tools. As with COBOL, they promise a streamlined, anyone-can-do-it efficiency. Look what happened there.

ZEB LARSON *is a writer, software engineer, and historian based in Columbus.*

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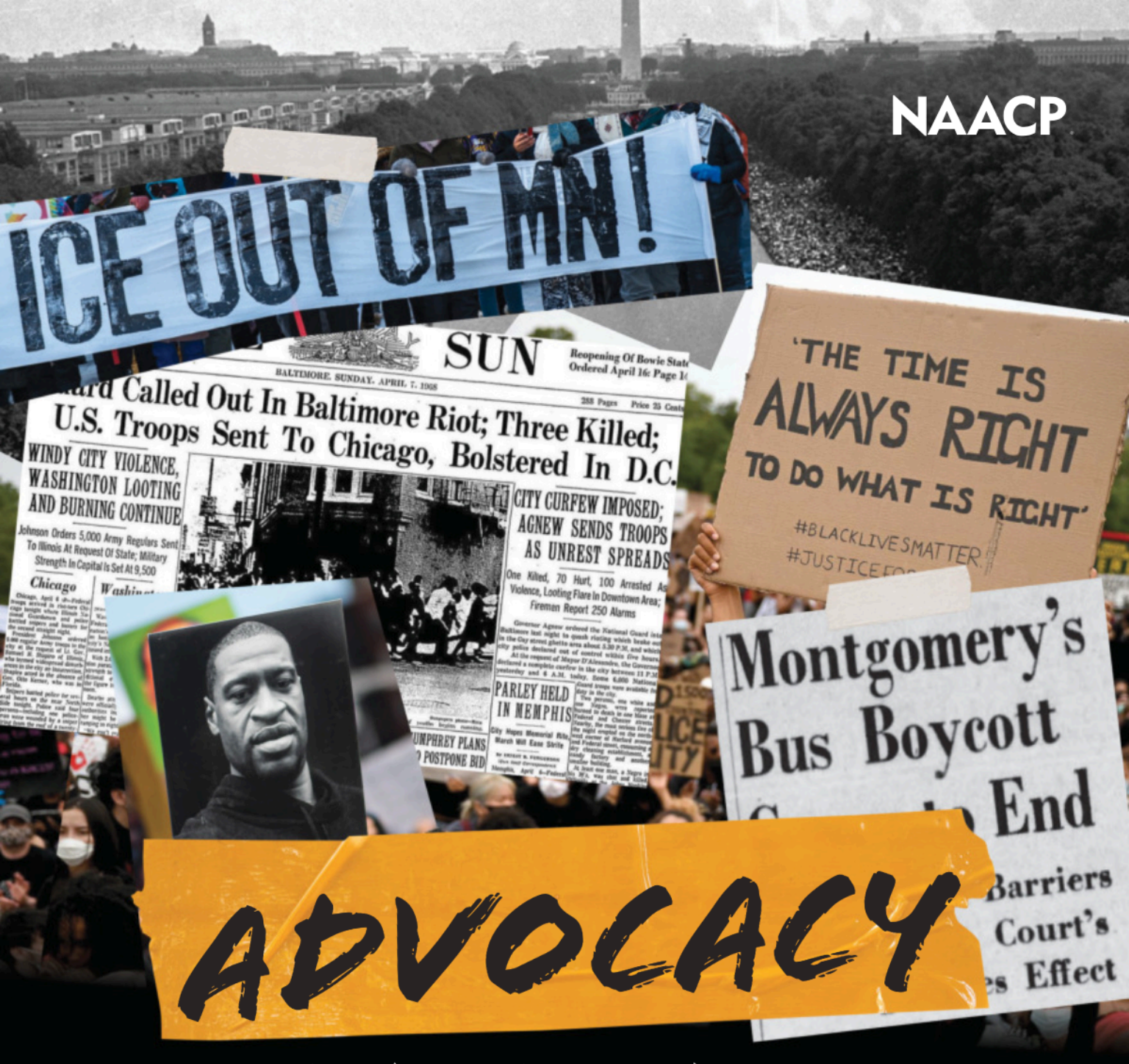
HACK YOUR HARDWARE

It's make-or-break time with these top tools for DIY devotees.

CURATED BY JEREMY WHITE AND CHRIS HASLAM | PHOTOGRAPH BY COLIN ROSS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BALTIMORE, SUNDAY, APRIL 7, 1968
Called Out In Baltimore Riot; Three Killed;
U.S. Troops Sent To Chicago, Bolstered In D.C.
WINDY CITY VIOLENCE, WASHINGTON LOOTING AND BURNING CONTINUE
CITY CURFEW IMPOSED; AGNEW SENDS TROOPS AS UNREST SPREADS
PARLEY HELD IN MEMPHIS
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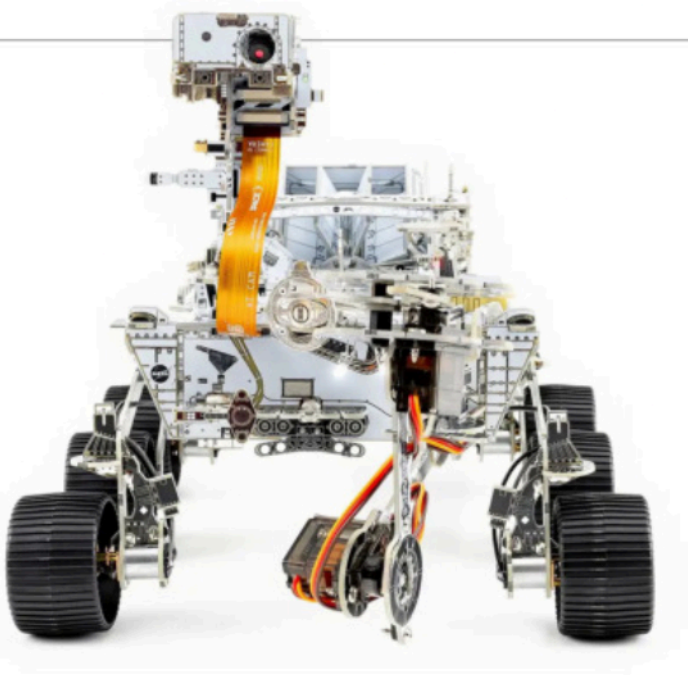

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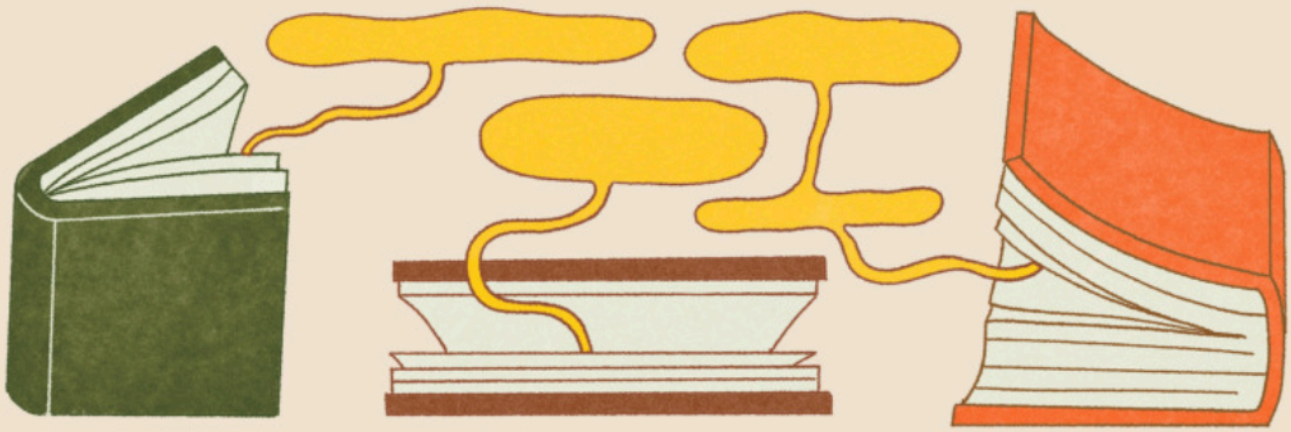

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THE WAR MACHINE 34.03

WHEN I STARTED writing this, American and Israeli military operations in Iran were widely anticipated but still a subject of speculation. A mere 48 hours later, we're two days into a bombing campaign that has killed the Islamic Republic's leader. By the time you read this, and the rest of WIRED's War Machine issue and online package, there's no telling how inflamed the Middle East—and the world—will be.

This conflict with Iran is only the latest among a handful of seemingly intractable wars taking place around the globe, from Ukraine to Sudan to Gaza, where an uneasy ceasefire barely holds. There, as Mahmoud Mushtaha documents (p. 24), a complete lack of forensic identification technology has led to an epidemic of missing people. Taken together with Israel's opacity around Gazan detainees, this means that thousands of families have no idea where to find their loved ones. The grief, the paralysis, is endless.

War has also reached the United States, as Donald Trump's supercharged immigration enforcement machine continues to conduct violent operations across the country on a daily basis. As contributor Maddy Crowell found when she traveled to Chicago earlier this year (p. 52), ICE's surveillance dragnet is doing exactly what this administration appears to want: stoking terror and trauma among immigrants. That includes the family who so generously allowed WIRED to spend time with them at home. There, they wait: blinds closed, doors locked, anxiety piqued, hoping against hope that ICE's watchful eye will look elsewhere, or disappear entirely.

We don't know, of course, when or if that might happen. Nor do we know whether the Middle East will become yet another violent quagmire of America's making for years to come, or something worse. The only thing we do know is that war, more technologically mediated than ever before, is decisively here: It's the unmarked car filled with masked agents down the block, the missile whistling through the night sky, the unspeakable agony of a missing son and row upon row of unidentified bodies.

I started my career in 2008, covering the technology fueling America's wars in Iraq and Afghanistan. Since then, I've learned that every conflict in this world's roiling war machine looks a little bit different—the tech is perennially more developed, more potent, and often more detached from human suffering than it was the last time around. But it's the people, still and always, at home and abroad, who pay an enduring price for what the machine has wrought.

KATIE DRUMMOND
GLOBAL EDITORIAL DIRECTOR

SO FAR IN TRUMP'S SECOND TERM, THE U.S. HAS ORDERED STRIKES ON 7 COUNTRIES.

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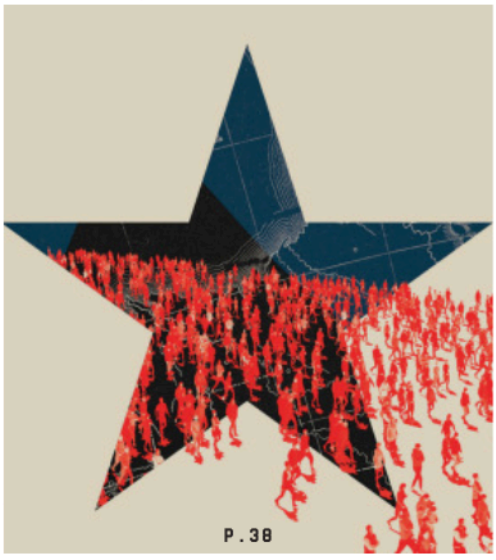
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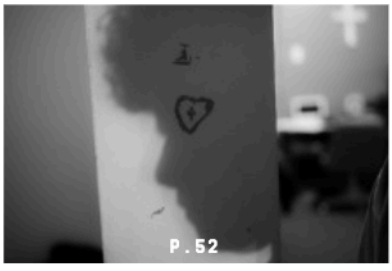
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THE WAR MACHINE SPOT ILLUSTRATIONS: ELENA LACEY

They are not alive.

They are not dead.

They are simply gone.

MISSING IN GAZA

BY
MAHMOUD MUSHTAHA

PHOTOGRAPHS BY
OMAR AL-QATTAA

IN

THE EARLY MORNING dark, Abeer Skaik turned to her husband, Ali Al-Qatta, and said that today would be the day they would find their son. Ali nodded in silence, and she handed him the stack of flyers. Each bore a photograph of 16-year-old Hassan smiling widely, his shoulders loose, wearing a plain red T-shirt. He is looking directly at the camera, unguarded. On top of the page, in large letters, Abeer had written a single word in bold red ink: Munashada!—an appeal.

Abeer watched as Ali stepped into a car with a few close friends and drove away. They started the 30-kilometer trip south, from al-Tuffah, east of Gaza City, to the European Hospital in Khan Younis. They had heard that a group of people detained by Israel, including children, would be released there.

The gate was already crowded. Families stood shoulder to shoulder, wrapped in blankets against the cold, clutching photographs and ID cards. Ali distributed the flyers among his friends. When the buses of released detainees arrived, he and the others moved slowly through the narrow gaps between clusters of people. Some of those who had just been released were being pulled into embraces. Ali waited at the edge of each reunion. "Have you seen my son?" he asked. One after another, people shook their heads. The crowds thinned. It was 2 am by the time Ali returned. Abeer watched her husband place the photographs on the table. They stood and looked at each other without speaking, Ali's eyes distant as if he was entering someone else's house. It had been 10 months since they had last been with their son.

Before the October 7 attacks, before a UN commission and a host of Palestinian and international rights groups determined that Israel is committing a genocide in Gaza, Abeer's life had been organized around Hassan's routines. He woke at the same hour every morning, ate the same foods in the same order, needed the house cleaned in a specific way—the floor washed, the table wiped after every meal. When he was 11 months old, Hassan's parents saw that he wasn't able to crawl or sit and that he didn't babble the way his sister had at that age. After a long series of medical assessments, Hassan, then 5, was diagnosed with autism spectrum disorder. Abeer says Israel had denied the family's request to obtain treatment for Hassan outside Gaza. So Abeer started teaching herself therapy techniques, how to build behavioral routines, how to manage his sensory overload. Together, she and her husband, Ali, structured Hassan's days around safety and repetition, and they learned how to fill their house with joy. Hassan laughed when his father splashed him in the bath just the way he demanded, showed an endless appetite for turning the pages of magazines and poring through photos in restaurant menus, loved to sit on soft pillows with his mother. "I used to say I had four eyes," Abeer says. "Mine and his. Mine never slept."

The bombs were the first thing to break Hassan. Every explosion made the 16-year-old press a shaking hand to his chest and whisper, "Mama, my heart is scared." Displacement fractured him again. He screamed each of the four times they had to evacuate. "Why am I leaving my home? I don't want to leave home. I want my bed," he said. Hassan, who could not tolerate feeling unwashed even for a few hours, went 10 full days without showering. One day while they were sheltering at a relative's home, he carried a small bottle of water, followed his mother around, and begged for a shower.

By April 2024, scarcity had entered every part of daily life. Starvation deepened as Israel cut off food supplies. Clean

water was hard to find. Abeer lost about 40 pounds. Days before Hassan disappeared, he snapped at his mother over what little food remained—only a dry concoction they called bread, made of mixed seeds that were once sold as animal feed, which left it with a repulsive smell. He did not understand why there was no real bread, no rice, no milk, no meat. Hassan stared at what he'd been given, pushed it away, and shouted, "What are you feeding me?" In a moment of pure overwhelm, he knocked the table on its side and ran from the house.

Hassan's confusion grew, until finally, one afternoon, he took his bicycle and pushed it through the doorway. He had learned to ride long before the war, practicing again and again along the same short stretch of street beneath their building. As he grew older, the bicycle became part of his routine. Neighbors were used to seeing him, looping the same corners, stopping in the same places, moving through the neighborhood in a way that felt safe and familiar to him.

After Hassan rode away, Abeer expected him back within minutes, as usual. But then 10 minutes passed, and 30. The light began to fade as evening approached. Ali left to search the nearby streets. Abeer remained inside, her four other children in the home, moving between the doorway and the window, her phone in her hand calling neighbors and relatives. Each time footsteps passed outside, she jumped up to look.

By night, there was no electricity, no light, and the street emptied in anticipation of heavy bombardment. Neighbors told Abeer they had not seen Hassan. No one remembered a boy riding past. After dark, her husband returned briefly, then went out again, following what remained of the routes Hassan always took—the narrow alley beside the building, the back street that avoided traffic and noise. Before the war, Hassan could move through Gaza's streets without hesitation. He had carried the city in his head—the map that led him to relatives' homes, to small shops, to familiar cafés, to the corners and shortcuts that anchored his routine. But these were no longer the streets he knew. Entire neighborhoods had been leveled. Buildings had fallen into the road. And Gaza had been split in two by an Israeli checkpoint on al-Rashid Street, intersecting with a militarized line dividing north and south.

"It was as if the ground swallowed him," Abeer says.

What followed was less an investigation than a desperate, repetitive circuit—similar to the ones that thousands of Gazan families now move through. It is a shared condition, this radical uncertainty, in which the fate of missing people can seldom be resolved by any accessible authority. Some of Gaza's missing were taken from their homes during military raids, others were last seen at checkpoints or approaching aid distribution sites, or essentially taken to be used as human shields by Israeli forces (a practice that the Israel Defense Forces says it expressly prohibits). Some have vanished into informal Israeli detention sites that yield almost no information on who is alive, dead, or in custody. Others have been effectively "evaporated" by extreme-heat munitions, leaving no recoverable bodies. Still others were buried immediately by neighbors to keep them from the dogs, without any record. Many never reach a morgue, never pass through a hospital register. Their names appear on no casualty lists, prison databases, or death registries. They are simply gone.

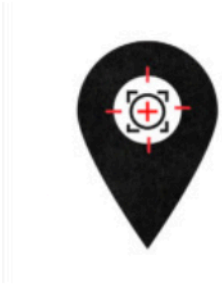
This is not some unavoidable consequence of war. In most contemporary conflicts, unidentified bodies are eventually linked to families through forensic identification systems. This process can take years and is often incomplete, but global systems exist to import or access the necessary technologies. Gaza, though, has been a kind of forensic desert for years now. It is a territory that has been systematically denied the tools required to name its dead.

When Israel imposed a blockade on Gaza beginning in 2007, it soon placed those tools—for toxicology testing, genetic analysis, DNA testing, and even fingerprint and biometric scanners—on a list of "dual use" items, which the government says can also be used for military purposes. There is little transparency in this realm. An official list of blocked goods used to be available online, but archived

In Ali and Abeer's children's room, a box of Hassan's belongings.

versions have not been updated since 2020, and it's been subject to change. In addition to specific items, Israel bars whole categories of things, like "communications equipment. Now, in this time of unparalleled death, the unidentified dead cannot be linked through DNA to the living. The Israeli government has also hobbled the mechanisms once meant to allow families to identify relatives held in detention, and has barred the International Committee of the Red Cross (ICRC) from accessing prisoners, in violation of the Geneva Convention. Meanwhile, entire swaths of Gaza—where countless bodies sit under the rubble or in mass graves—are controlled by Israel and are off-limits for Palestinian travel. Where Gazan authorities have interred the dead, bodies are often buried before proper biological samples have been taken, sometimes without any real records at all.

In all this chaos, amid the collapse of official documentation systems, no single institution can authoritatively say how many people are missing in Gaza. The Gaza Health Ministry places its estimate at more than 9,500. The Palestinian Center for the Missing and Forcibly Disappeared says its field estimates indicate around 9,000. The ICRC says it has received approximately 11,500 tracing requests for missing people in Gaza and that around half of those cases remain unresolved. Each of these organizations emphasize that their figures may be incomplete. In January, the Institute for Social and Economic Progress, a Palestinian research group, conducted an exclusive poll across Gaza to assess the crisis of the missing. Using the results, ISEP's best estimate is that there could be 14,000 to 15,000 people still missing in Gaza out of a total population of around 2 million.



For the loved ones of the missing, this state of mass irresolution can amount to a lived experience of profound, frenetic, risky restlessness. Even with daily bombings, Abeer and her husband move through rubble, shelters, hospitals, and ruins. They have pushed through crowds of displaced families, questioning anyone who might have seen a teenage boy on a bicycle. They have contacted everyone they can. "We searched for him everywhere," Abeer says. "We posted on social media and sent his photo to social media influencers. We told the news channels. We distributed posters." They have followed every rumor, every faint possibility, looking for any witnesses. "But nothing," Abeer says. "There is no trace of him."

"THOUSANDS OF FAMILIES ONLY WANT ONE THING—TO BURY WITH DIGNITY. AND I CANNOT HELP THEM."

Nearly two years after Hassan disappeared, Abeer has received no official determination of his fate. Hassan is not confirmed dead. He is not confirmed alive. He is not officially acknowledged as detained. He exists only in fragments: a photograph, an old note, the memory of a bicycle disappearing down the street. His name surfaces intermittently through informal channels, then vanishes again. Abeer does not describe grief any more. She describes a kind of purgatory. "This process destroys your mind," she says. "It is paralysis."

DAYS AFTER HASSAN disappeared, his father, Ali, went to search for him at Al-Shifa hospital. Families crowded the entrances, waiting their turn to look for loved ones. The corridors were lined with bodies wrapped in blankets or plastic. Refrigerators were full. Some corpses lay in ice-cream freezers. The air was heavy with disinfectant and decay; the floors slick with water, blood, and residue from hurried washings.

Some searchers cried. Others stood rigid, scanning rows of bodies in silence. There was no privacy, no order—only urgency. When staff were overwhelmed, men lifted coverings themselves, exposing limbs, torsos, faces burned or crushed beyond recognition. Families searched for birthmarks, scars, teeth, fragments of clothing. Some were pulled away mid-glance by relatives who decided they should not see more.

Ali moved through the space. He did not linger. He looked, registered what he could, and moved on. He went home and broke down for the first time since he'd been married. "The mountain became two mountains upon me," says Abeer. "I was afraid to cry in front of Ali, afraid he would collapse in my arms—and that I would lose both my son and his father."

The hospital that undid Ali is the workplace where Khalil Hamada spends his days. Hamada, 53, has headed Gaza's forensic medicine department out of Al-Shifa Hospital since 2022. When I first spoke to him, he was living in a tent after being displaced from his home in the Al-Jalaa neighborhood, west of Gaza

Abeer Skaik, photographed at home.

City. "My heart collapses every day," he told me when we talked in February. "People come to us looking for their loved ones. Thousands of families want only one thing—to bury with dignity, to bury a father, a mother, a brother, to have a name and a place to grieve. And I cannot help them."

War has long forced societies to invent ways of naming the dead. Modern forensic identification itself grew out of conflict: One of its earliest recorded uses dates to 1776, when Paul Revere identified a fallen soldier by the distinctive false teeth he had made for him. In the wars that followed, the same basic question—who is this person?—drove the steady expansion of forensic science, from dental records and fingerprints to DNA and biometric databases.

In Gaza, that historical progress has been denied. Bodies come to Hamada in conditions that would make even scientific analysis difficult—burned beyond recognition, torn apart by collapsing buildings, recovered after days or weeks in makeshift and mass graves, long after visual certainty had disappeared. But in Gaza, identification still depends almost entirely on what the eye can recognize.

In a functioning system, Hamada explained, when other, easier methods fail, biological samples would be processed using genetic analyzers and comparison software, then matched against a database of reference samples from families, fingerprint and dental records, and national civil registries. This is the standard procedure described by the International Commission on Missing Persons. Each conflict, from Guatemala to Ukraine and beyond, has its own unique circumstances when it comes to the use of forensic technology. Syria, for instance, only recently resumed DNA analysis to identify bodies from its decade-plus civil war because sanctions previously barred it from importing the technology. But Israel, for decades, has effectively prevented the Ministry of Health in Gaza from establishing a forensic lab, classifying nearly all of the tools necessary to do so as potentially dangerous.

"For years, we appealed to the World Health Organization and the International Committee of the Red Cross for forensic equipment," Hamada said. "Nothing was allowed in."

In January 2024, during a brief truce, an international NGO brought a forensic specialist from Oslo University to Gaza. That expert trained 10 Palestinian doctors in emergency mass-fatality documentation and evidence-preservation techniques adapted to extreme low-resource conditions. The program leaders ultimately chose four to continue in the specialization, bringing the number of forensically trained doctors in Gaza to seven. But they still have no laboratories. "We have doctors, but we don't have machines," Hamada says. "We photograph and record whatever we can. But in most cases, it is not enough."

In the absence of proper equipment, Hamada's team conducts a rudimentary postmortem review—consisting of a snapshot with a digital camera, a

Hamada inside his rudimentary lab.

hand-filled form recording a case number and date, an estimated age and height when possible, and notes on any visible injuries, scars, surgical marks, dental features, and hair, along with an inventory of clothing and a list of personal belongings. During the archiving process, which includes making physical binders as well as electronic files, the team also collects biological samples—such as teeth or bone fragments—so they can be preserved, since there are not enough morgues to store the bodies.

Despite the efforts of Hamada and his colleagues, he estimates that only a few hundred unidentified bodies have been formally archived, a tiny fraction of the total. And under current conditions, even these cases may lead nowhere. "Gaza has no biometric database—no fingerprints, no dental records, no DNA profiles," Hamada said. "Even if we had machines, we would have nothing to compare against."

During the war, a new stopgap system for Gazan burials has emerged. A committee composed of representatives from the Ministry of Health, the Ministry of Religious Affairs, and the Palestinian Civil Defense authorizes the burial of remains in numbered graves, digitally mapped in accordance with international guidelines and with some assistance from ICRC officials. This is so that, in the future, if anyone recognizes a personal belonging, authorities will know where the body is buried. If DNA testing materials are later allowed into Gaza, they will be able to conduct proper forensic testing. "We keep every record," Hamada said. "Because maybe, when the war ends and the laboratories return, someone will recognize their loved one."

INTERNATIONAL LAW, SAYS Mayy El Sheikh, a spokesman from the Office of the United Nations High Commissioner for Human Rights, is clear on the subject of identification. "Israel has an obligation to take all feasible measures to account for missing persons and to provide families with any available information on the fate and whereabouts of missing relatives," she says.

"The combined effect of Israel's obstruction of the entry of necessary equipment and trained personnel, its failure to recover human remains and to treat them with respect and dignity, the continued withholding of bodies, and its practice of enforced disappearance and incommunicado detention is foreseeable and preventable: agony for thousands of Palestinian families deprived of their right to learn the fates of their

Above: Hamada sits outside of the bombed Al-Shifa Hospital. Left: Binders filled with details of bodies in his office.

loved ones and their right to bury their dead in accordance with their customs and beliefs," says El Sheikh. "It is cruel, inhumane, and flies in the face of international law."

In response to a detailed list of questions, the Israeli military says it "has operated and continues to operate in accordance with international law throughout the conflict, taking feasible precautions to minimize harm to civilians and civilian property," and referred WIRED to the Israeli Prison Services for comment on detentions. The Prison Services did not respond to a request for comment.

Over the course of October and November 2025, Israel returned 315 bodies to Gaza after a ceasefire. They arrived without names or paperwork—only remains. "The bodies arrive void of information," says Hamada. According to Gaza's Ministry of Health, 182 of these bodies were buried unnamed. Ultimately, 91 were identified, almost always because relatives recognized a scar, a tooth, or the outline of a hand.

Out in the streets, too, or in the ruins of bombed buildings, survivors identify scattered remains through a piece of clothing, a ring, the look of someone's hair.

This is how I remember my own experience. On November 21, 2023, a single strike on a building in Shuja'iyya, a neighborhood east of Gaza City, killed more than 70 people, most of them distant relatives of mine. What remained were not bodies but fragments—burned, crushed, and mixed beyond recognition. We laid the remains out in rows and moved between them slowly, making decisions no family should have to make. When visual identification failed, we relied on context: Who had been inside the house, who had not been seen since the explosion, who was known to be in which room. When even that was insufficient, we laid blankets out on the ground and decided that each one would represent a household. If a family of five was unaccounted for, we placed the remains of what we guessed could be five people on top of one blanket. In that way, for instance, we accounted for a family of two parents and their three children.

Family after family in Gaza has done the same. In other cases, dealing intimately with the dead simply falls to whoever is nearby. Mohammed Shehta Dremly, 34, recalls sheltering for days with his family and dozens of others in close quarters as bombs rained down around him. On the seventh night, flares lit the sky, drones hovered overhead, and smoke bombs filled the street. A shell hit their building; another struck the house next door, where newly displaced families were sheltering. Around evening prayer time, they heard a strike, followed by screams. No one could go outside. Windows shattered, doors splintered. "I didn't think we would see the morning," he said.

At dawn, Dremly, his uncle, and a neighbor went outside. The house next door had collapsed. More than 15 people inside had been killed. The wounded were evacuated by donkey cart, because no ambulance could reach the site. As Dremly walked through the rubble, he encountered body parts scattered across the road.

"I found a man's leg, separated from the body," he said. "Then a head. Then a thigh. Then an arm."

There were no rescuers, no relatives, no officials. The three men decided to bury the remains so dogs would not eat them. Dremly dug a pit for nearly an hour. The men collected fragments from at least three bodies—mixed and unidentifiable. As they worked, an Israeli drone hovered overhead. He lifted part of a leg toward it, hoping to show what they were doing, afraid they would be shot. The three men covered the pit and fled as shelling resumed. When Dremly returned days later, dogs had dug up the grave. He buried the remains again. He still doesn't know who they were.

Israel's efforts to identify its own dead are robust. In late January of this year, Israeli forces excavated dozens of Palestinian bodies from the Shuja'iyya neighborhood and transferred them to laboratories in Israel in an attempt to identify a single Israeli hostage, Ran Gvili, whom Hamas said it had been unable to return. For Hamada, watching this unfold was unbearable. "The world is cruel. It is shameless," he says, his speech suddenly accelerating. "It mourns the body of one soldier, while thousands of us—including bodies of children, of women ..." He pauses, struggles to finish the thought, then simply repeats: "Thousands of us."

ON JANUARY 7, 2024, a 31-year-old woman named Bisan Fadl Fayyad was reported missing in Deir al-Balah after

she left their home and did not return. The next day, her family received a call from Gaza's Nasser Hospital saying that authorities there had a body they believed to be Bisan's.

At the hospital, the family was presented with three badly burned parts. "I could not recognize the body," her father told journalists. Along with the remains, the hospital also gave them Bisan's damaged ID, which they were told had been found alongside the remains. The family buried the remains and began mourning.

Then, over a year later, on August 17, 2025, Bisan's brother, Mohammed Fayyad, posted on social media saying that the family had received reports that his sister was alive and being held in Israeli custody. A flurry of press coverage followed, and the family waited, expecting to see her again. The October 2025 ceasefire was declared. One group of prisoners was released, then another. But Bisan was not among them. The family soon stopped speaking publicly about her case. If Bisan was being held in detention, they told me, they feared that media attention could harm her.

"WE HAVE DOCTORS, BUT WE DON'T HAVE MACHINES. WE PHOTOGRAPH AND RECORD WHAT WE CAN. BUT IN MOST CASES, IT IS NOT ENOUGH."

On January 18, her brother, Anan Fayyad, posted again. He said he no longer knew what was true. "If she was martyred, may God have mercy on her," he wrote on Facebook. "If she is in detention, I ask God to bring her back to us soon."

Bisan's family can not know for sure whether the body they buried two years ago was indeed hers. But neither could they be certain that the silence about her detention meant much of anything. Getting information on Palestinians in Israeli custody has always been difficult. But since October 7, the system for finding Gazan detainees has become a maddening labyrinth that leaves families hanging on to shards of information from those who have been released.

For decades before the war, the ICRC has maintained access to Palestinians held by Israel, and an Israeli nonprofit called HaMoked operated a detainee-tracing hotline under an arrangement with the Israeli military. That system functioned unevenly but predictably: HaMoked could submit names and receive a confirmation of detention and a location. Cases from Gaza were relatively rare. The systems collapsed entirely in October 2023, when Israel argued it had no obligation to provide any information about Gaza detainees. The ICRC was entirely prohibited from visiting prisoners, and the access HaMoked used to have was restricted. In the months and years that followed, thousands of Palestinians have been taken into Israeli custody—their fates often unknown.

The ICRC is still denied access. A new, limited tracing mechanism that HaMoked can use was introduced in May 2024, after repeated High Court petitions. It requires families to send a signed power of attorney authorizing a lawyer or human rights organization to file a tracing request—a difficult task amid communication blackouts, displacement, and limited phone and internet access in Gaza.

Responses have been reduced to a brief formula—either confirming detention or stating there is "no indication" of an arrest—without explanation or supporting information. Since this new system was introduced, HaMoked has traced 4,985 individuals. In 3,353 cases, Israel confirmed the person was detained. In 1,632 cases, authorities said there was no information.

Sometimes, people suddenly reemerge alive from Israeli custody after months of secret detention. In one case, in late 2023, Israeli soldiers raided the home where a 35-year-old man named Ehab Diab was sheltering with his family. The family watched as Diab was handcuffed, placed in an armored military vehicle, and driven off. Nine months after he disappeared, the family contacted an Israeli human rights organization called Gisha, which submitted a formal inquiry to Israel's Military Police asking where Diab was being held in order to arrange a lawyer's visit. Less than an hour later, the military replied: There was "no indication of the arrest or detention" of Diab—"no indication" of the abduction Diab's family had witnessed with their own eyes. More months, more paperwork, more stonewalling. Then, on July 2, 2025—19 months after the arrest—the state submitted a response in court. Diab, wrote the chief of the southern command, Lt. Col. Rabbi David Haimov, was "being held as a corpse."

The Office of the UN High Commissioner for Human Rights has verified the deaths of 89 Palestinians—88 men and one boy—in Israeli custody since October 7, 2023. (Physicians for Human Rights has put the number at 94 and says

that its figure is likely an undercount.) Israeli authorities have reported additional deaths without sufficient detail for independent verification, the OHCHR says. The office also documented at least five cases in which Palestinians died in custody shortly after being shot by Israeli forces. The Israeli military says that an "investigation is conducted for each death of a detainee by the military police."

Abeer already knew, when her son went missing, that Israeli forces had swept up thousands of Gazans, including children, into detention. In shelters and relatives' homes, she heard stories like those of Diab. She heard rumors about children who had been taken and then released months later. They were children of Hassan's age.

It took nearly a year after Hassan disappeared for the first specific lead to reach Abeer. A call came from a local community leader who told the family he had heard Hassan's name mentioned among people believed to be alive in Israeli detention. The tip went nowhere.

Abeer pulled on every thread until she reached its end. To a host of offices and organizations, she sent the same details: Hassan's full name, date of birth, identity number, the neighborhood he left from, and the day he disappeared. The replies she received were short and procedural. Rumors came from acquaintances and people claiming to have information. One said he was detained. Another that he was dead. Another that he was under the rubble, or in the south. "They tell you, 'Forget him, imagine he's been killed,'" Abeer says.

Hope returned through the same informal channels. In March 2025, a distant relative told the family she'd heard that there were autistic minors in Israeli detention—and that Hassan was among them, alive. A relative filmed the moment Abeer's brother-in-law called with this news. In the video, Abeer is seen cooking when she answers the phone. Her voice rises over the sizzle of the stove. "What's happening? What's happening? Please, don't make me nervous," she says, the tongs in her hand hanging in midair as she appears to freeze. Abeer then suddenly collapses on the kitchen floor. "Oh God, oh God, oh God," she cries, before a relative rushes to hold her.

COUNTING THE MISSING

With its displaced population and decimated infrastructure, getting accurate numbers of Gaza's missing is all but impossible. The Palestine Reporting Lab worked with the Institute for Social and Economic Progress, a Palestinian research group, to conduct an exclusive survey on the ground. ISEP surveyed 600 randomly selected individuals in late January, They estimate the number of Gazans who went missing at some point could be around 51,000. Those who remain unaccounted for? Between 14,000 and 15,000 people. —M.M.

1 OUT OF EVERY 8 HOUSEHOLDS HAVE HAD A MISSING MEMBER AT SOME POINT SINCE OCTOBER 7, 2023.

1 OUT OF EVERY 28 HOUSEHOLDS IN GAZA ARE STILL MISSING A MEMBER.

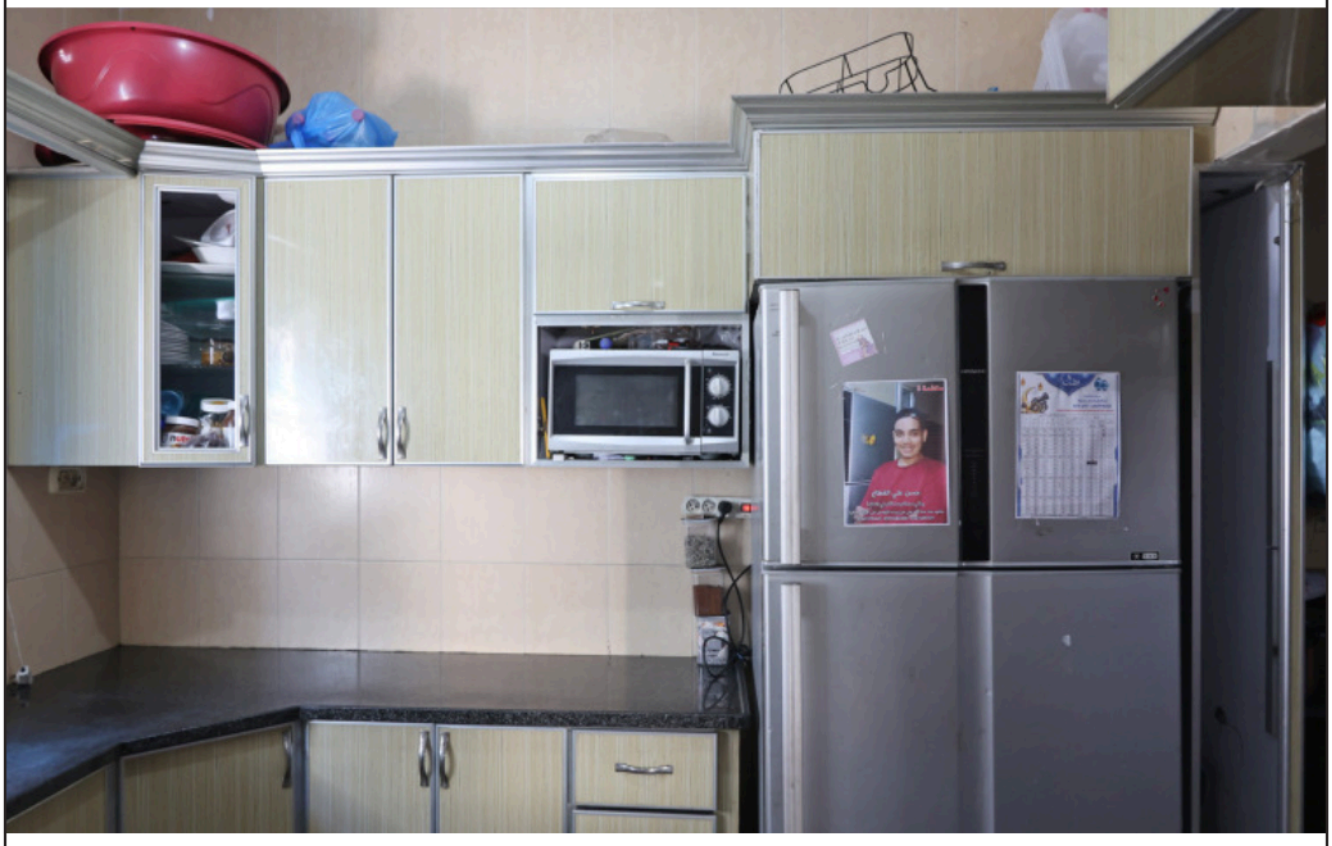
OF THOSE WHO WERE EVER MISSING A HOUSEHOLD MEMBER, OVER A THIRD [35.9 PERCENT] LATER FOUND OUT THEY WERE DEAD, AND NEARLY A QUARTER [24.4 PERCENT] LATER LEARNED THEY HAD BEEN DETAINED.

FOR NEARLY HALF [45.5 PERCENT] OF THOSE HOUSEHOLDS THAT LOST A MEMBER AND LATER LEARNED THEIR FATE, IT TOOK MORE THAN A MONTH TO GET FINALITY. FOR 1 IN 11 OF THOSE HOUSEHOLDS, IT TOOK MORE THAN SIX MONTHS.

ALMOST ONE-QUARTER [23.7 PERCENT] OF HOUSEHOLDS THAT HAVE HAD A MISSING MEMBER HAVE NOT BEEN ABLE TO TRY TO IDENTIFY A POSSIBLE BODY, BECAUSE THEY COULD NOT REACH THE AREAS WHERE THE BODY WAS BELIEVED TO BE.

THE SAME NUMBER OF HOUSEHOLDS WERE CALLED TO IDENTIFY A BODY BUT FOUND IT WAS NOT THE PERSON THEY WERE LOOKING FOR.

To estimate the total number of missing people in Gaza, ISEP used quota sampling to survey a representative pool of Gazans in 53 locations across the strip and cross-tabulated the results with existing pre- and postwar data on the Gazan population and household size.



Above: Abeer and Ali walk in their neighborhood, where they stay in hopes that Hassan will come home. Below: In their kitchen, a flyer that they made to help locate Hassan.

Abeer contacted the ICRC and human rights groups to see if they could confirm the tip. But nobody had any record of Hassan.

What this uncertainty denies Abeer, and so many others—orphans with missing parents, wives without husbands, fathers taking care of kids without mothers—isn't just peace of mind. Without documentation, aid systems cannot function and life remains suspended. Under the Gazan Ministry of Health's system, a death cannot be registered without a body unless two witnesses testify that they saw the body or the burial. The rule assumes functioning hospitals, registries, and documentation.

In an effort to break the impasse, last November, authorities in Gaza proposed allowing death certificates to be issued for a person who has been missing for more than six months after the October 2025 ceasefire, even without an identified body. The idea was to help thousands unlock inheritance, guardianship, and access to assistance. But the judicial authority in Ramallah immediately rejected it, reaffirming that, by law, a declaration of death may be issued only after four years of disappearance. Such a discrepancy would have meant the same person could end up listed as dead in one system and alive in another.

ABEER AND ALI are frozen. In the two years since their son vanished, the world around them has turned upside down. Most of the buildings in their area were bombed, and almost everyone they knew fled. Their relatives begged them to leave the north of Gaza. But Abeer and Ali did not. They went back to their damaged home, because it is the one place Hassan might know to return to, the one place he might know the way back to. Even before Hassan went missing, Abeer and Ali resisted moving south when relatives began evacuating, because new places unsettled him and disrupted the routines and rhythms Hassan had depended on. They did not want to push him far from the streets he knew.

"We saw death many times," Abeer says. "The tanks arrived in our street." But her resolve was firm. "If you want me to leave this city," she says, "bring me my son first. Put him in my hands, and I will go."

What keeps Abeer awake some nights is imagining what detention would do to Hassan. "I can't bear it," she says. "My son has never been hit. Never. If soldiers are torturing him, how can I live? I imagine them beating him, and I lose control. I can't imagine anyone raising a hand against him." On other nights she is kept up by the thought that he is dead. A few weeks ago, a body was found on al-Rashid Street. A neighbor called Ali and asked him to come. He went. The body was that of an older man. He had a beard. It could not have been Hassan.

Ali is exhausted by the cycle. "My husband is more realistic than I am," Abeer says. "He always tells me, 'Even if they say Hassan is alive, they'll play with our hearts.' And I know he's right. Every time we think there is news, they twist it, delay it, keep us waiting. It feels like they want to burn our nerves—to keep us living between hope and despair."

The strain has opened fissures between them. Abeer reacts immediately. She follows every lead, even when she already expects it to evaporate. Ali hesitates. He asks for details before letting someone describe a body. Abeer believes her husband has stopped believing their son is alive. "They never let anyone come back from there," he has said. Yet Ali searches anyway—already disappointed, already trying to harden himself. He even walks to the edge of Israel's so-called "yellow line" buffer zone, where people warn him he could be shot if he goes any further. When he tells Abeer a lead has failed, she feels something taken from her. When she asks him to wait for confirmation, he hears only the prolongation of pain. They are negotiating how much hope their family can still afford.

On January 19, 2026, eight detainees were released to Al-Aqsa Martyrs Hospital in Deir al-Balah. One of them was a 16-year-old child. Ali and Abeer found the name of the boy's family on social media, and Ali ran straight to the family, to ask the released teenager if he had seen Hassan. He showed the boy Hassan's photo. Like every other time, nothing came of it. Another lead turned to sand. "We search through piles of bones and teeth. We can barely recognize any facial features," Abeer says. "We find this person's boot, that person's belt. This is what we have to look through. It is as if we're searching the air itself."

On the day Hassan disappeared, he was wearing the top of a tracksuit. Abeer still keeps the trousers, she says—the last thread still tethering her to her son that fateful day. Two years ago, a few days after her son vanished, Abeer discovered a voice message on her phone that Hassan had sent his teacher in Khan Younis. The teacher had spent years helping him with speech and social skills, and he was deeply attached to her. In the message, his voice is thin. "I'm hungry," he says. "Make me food." Hassan had sent the note without Abeer knowing, when he heard that there was food to the south where the teacher lived. She thinks now that Hassan left their home to go to the teacher, in hopes of a meal. Abeer cannot listen to the voice memo. She cannot delete it.

This article was produced in partnership with the Palestine Reporting Lab, a project of Just Vision.

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WHAT WOULD SECESSION IN AMERICA LOOK LIKE?

BY
RYAN D. GRIFFITHS

ILLUSTRATIONS BY
JOAN WONG

IT'S BECOME ALMOST like a histamine response: After a shocking national event like the assassination of Charlie Kirk, or Donald Trump's deployment of the military to Los Angeles last June, mentions of the term "civil war" and calls for secession surge online. This kind of talk flared again in January, when two citizens were shot and killed by immigration agents on the streets of Minneapolis, and governor Tim Walz mobilized the Minnesota National Guard to be ready to support local law enforcement. "I mean, is this a Fort Sumter?" Walz said in an interview with The Atlantic, invoking the battle that sparked the Civil War. In a loopier register, former Minnesota governor Jesse Ventura urged the state to secede from the US and become part of Canada. "I think someone seriously should contact Canada and ask them if they're open to this," he said.

These two statements by men who've held the same office pretty well sketch the basic outlines of popular discourse about American fragmentation: Spiraling civil war is the nightmare, tidy secession is the dream. But is it really possible to have one without the other? And what would secession actually look like in the United States?

Ever since the 1990s, some Silicon Valley futurists have coolly forecast the crack-up of an obsolete American nation-state—without really specifying any grisly details. And the old meme that jokingly divides North America into a blue "United States of

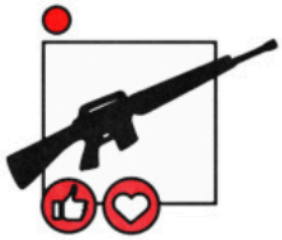
GETTY IMAGES

Canada" and a red "Jesusland" has been around since the mid-2000s. But as red and blue America have become more polarized on nearly every issue in the years since, a growing number of people across the spectrum have concluded that a secessionist breakup is indeed the best solution for America's irreconcilable differences. "We need a national divorce. We need to separate by red states and blue states," posted then Republican congresswoman Marjorie Taylor Greene of Georgia in 2023. "Everyone I talk to says this." (This was the plot, more or less, of the 2024 hit film *Civil War*.)

Hoping to channel this angst, a smattering of organized independence movements—like California's Calexit and the Texas Nationalist Movement, among others—have cropped up in recent years and have seen growing support. A 2023 Axios poll showed that 20 percent of Americans favor a "national divorce." And in a YouGov poll released within days of Trump's second inauguration, some 61 percent of Californians agreed with the statement that their state would "be better off if it peacefully seceded."

But that's the rub. The truth is that secession, the process by which part of a sovereign state breaks away to form a new one, is always tortured. Most secessionist projects flop, and about half erupt into violence. When secession does turn out peacefully, as in Czechoslovakia's Velvet Divorce, it is almost always because there is a nationally distinct and regionally concentrated population that possesses an internal border and some special administrative status that can be used to justify their demand for independence. None of these characteristics hold in the contemporary United States.

In reality, red and blue America are intricately intermixed. Political divisions cut not just through states—blue California has millions of Republicans; red Texas, millions of Democrats—but also neighborhoods and even households. An ideologically driven secession scenario would almost inevitably force a dangerous unmixing and re-sorting of Americans. Imagine trying to draw a new map that is coherent yet still satisfies the greatest number of people in a hyper-polarized environment; then imagine a series of security dilemmas,



stranded populations, and refugees on the run. This happened when India and Pakistan were partitioned in 1947 and when Cyprus was partitioned in 1974; it would probably happen in America too.

Many people want to draw an analogy between secession and marital divorce. But where the dissolution of a marriage is covered by civil law, there's no decided-upon legal framework that governs secession—no procedure, let alone precedent, for dividing the estate. How should national debt be distributed? What about social security? What about military installations and naval vessels? Given the acrimony that would attend an American divorce, we should expect each side to attempt to grab what they can.

Moreover, which side in a "divorce" would retain America's permanent seat on the UN Security Council? A breakaway California, say, would never be able to join the United Nations as a recognized sovereign state as long as the US sits on the council and could veto its membership application. Moreover, if Washington doesn't officially recognize a breakaway republic, neither will third-party countries like Canada or Mexico, lest they incur the wrath of their powerful neighbor. Consider the enormous coercive power that Trump is already wielding internationally. Now imagine how painful he'd make it for other countries to recognize a breakaway American state.

Of course, that's assuming the divorce is acrimonious. Secessionist groups like to imagine a mutual and amicable parting from the US. But this underestimates the practical, even existential, concerns of the US government. In its 1869 *Texas v. White* decision, the Supreme Court ruled that the union is "indissoluble" and that there is "no place for reconsideration or revocation, except through revolution or through consent of the States." That consent would be hard-won. Since all 50 states are juridically equal, America's federal structure creates a serious precedent-setting problem where secession is concerned. If California pushed for independence and the federal government gave its blessing, Texas could then demand the same right. One secession could unleash a domino effect that fractures the country into more parts, particularly as states gradually saw diminishing returns to remaining in a shrinking US. The fear of secessionist contagion is one of the reasons that many countries like Russia and Indonesia are

quick to clamp down on any secessionist claim as a way to deter all potential movements.

Indeed, perhaps the only national authorities that do have a vested interest in supporting secessionist movements are those of the mother nation's geopolitical rivals. From the perspective of Vladimir Putin or Xi Jinping, the disintegration of American power into multiple, smaller countries, all hostile to one another, would be a victory. Russia has a long track record of boosting American secessionist sentiment, including in Texas and California. One of the early leaders of CalExit, Louis Marinelli, actually moved to Russia in 2016 and helped run the organization from there, even establishing a California "embassy" in Moscow, before breaking ties with the movement under a cloud of negative press. "Calexit was not created by Russia," wrote Calexit founder Marcus Ruiz Evans in 2019, "but made a series of mistakes in associating with Russia early on." Even when secession movements are homegrown, rival powers are likely to encourage them.

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WALZ WAS CRITICIZED for hyperbole after his remarks comparing Minneapolis to Fort Sumter. But what happens if tensions between state and federal forces do continue to increase, more protesters and ICE agents are injured and killed, and the security forces on each side clash directly with each other? A 2024 simulation run by the Center for Ethics and the Rule of Law at the University of Pennsylvania concluded that this is exactly how a civil conflict in America could start.

Any number of events could continue to escalate polarization, distrust, and political violence in America. But a full-blown secessionist crisis would require a leader or party to champion the cause of independence—someone to articulate an alternative future and rally a substantial portion of the population around that flag.

Thankfully, there are no prominent leaders, regional governments, or parties calling for secession today. Due in part to the centripetal pressures created by the American two-party system, there is no real opening for distinctly regional parties to arise—no equivalent to the Scottish National Party or the Parti Québécois. But there are potential secessionist tipping-point scenarios to watch for. Here are two that take off from the moment of a national election, neither of them pretty.

First, imagine a disputed presidential election in 2028 or 2032. American politics has continued to deteriorate, and each side has increasingly adopted a "win-by-any-means" approach, with prominent leaders warning of a stolen election since early in the campaign. Now, with all the votes counted, neither side is willing to follow the example of Al Gore and concede a painfully close contest. So both sides claim the presidency and denounce the other. For the first time in its history, the US is torn between two competing chief executives.

This bifurcation is accompanied by intense, cycling political violence. Amid growing clamor on the far right for a Red-State America and on the far left for a BlueExit, both presidents choose to declare martial law and demand that the military countermand the orders of their opponent. Months of deadlock finally drive both sides to attempt a brokered division of the country into two ideological main blocs—leading to further fractures and partition-like violence.

In the second scenario—a variation on the first—imagine that one of the 2028 presidential candidates is tied to a state or region that already has latent secessionist leanings, like Texas or California. Again, the election results are questionable, and the incumbent party refuses to relinquish the White House and turn over power.

This sense that democracy has failed has, in the past, served as a tipping point for prominent leaders in other countries to yield to local pressures and throw their weight behind a secessionist cause. A key moment for Catalonian independistas, for instance, came in 2012 when Artur Mas, the Catalan president, finally joined with secessionists over a constitutional crisis with Spain, galvanizing the movement from fringe to mainstream.

In an American scenario where, say, a disenchanted Gavin Newsom chooses secession and throws in with the California Independence Party after an ambiguous national election, the US government would face a crisis. It could permit a referendum for California independence, risking a likely cascade effect and potential dissolution. Or it could deny any attempts at secession and risk violence.

Abraham Lincoln called this the choice between dissolution and blood, and he chose blood. Still today, secessionist civil war is the chief cause of violence in contemporary international politics. Advocates for secession think it is a safety valve that will resolve and pacify American political violence. But it's very much the opposite of that.

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PHOTO ILLUSTRATIONS BY KYLE BERGER

BLENDING IN

How American camouflage conquered the world.

BY AVERY TRUFELMAN

AT THE BROOKLYN Navy Yard—once famous for building aircraft carriers, now better known for creative studios—a company called Crye Precision is one of the biggest tenants. Its footprint in the building is 100,000 square feet. Inside its gigantic warehouse space, rows of whirring sewing machines are stitching together garments made out of the most popular, renowned, and confusing textile of our time: MultiCam.

MultiCam is so ubiquitous that you can buy a camping chair or baby carrier in the camouflage pattern. Arc'teryx and Outdoor Research make jackets in MultiCam. Perhaps most importantly, you may see this iteration of camo on police officers, SWAT teams, ICE agents, or your average January 6 rioter.

For its influence, the pattern has earned a place in MoMA's permanent collection, a thrill to the Cooper Union art students who created it. "They gave us a lifetime membership, which is cool," says Gregg Thompson, who was still in graduate school in 1999 when

THE RISE OF DIGITAL CAMO

THE CANADIAN MILITARY KICKED OFF THE DIGITAL CAMO TREND IN THE LATE '90S WITH CADPAT.

THE MARINE CORPS WAS THE FIRST OF THE US FORCES TO ADOPT THE DIGITAL PATTERN IN 2001.

GETTY IMAGES; REUTERS

a Cooper Union alumnus, Caleb Crye, reached out to him about a collaboration. "We always had an interest in all things military," says Thompson. "It's boy stuff—monster trucks and that kind of thing."

In 2001, Crye Precision (then known as Crye Associates) got its first military assignment: to make a prototype of a new kind of helmet. While the company was making it, 9/11 happened. With the announcement of the so-called War on Terror, Crye Precision took on a new challenge: camouflage. In all their exploratory research conversations with soldiers, Crye and Thompson learned that the US camouflage situation didn't work. Soldiers were frequently wearing mismatched camo, which made them stand out on the battlefield as opposed to blending in. "When guys deploy, they're wearing desert uniforms with woodland body armor," Thompson explains. What if, they thought, there was one camouflage pattern that could work almost anywhere? It could be a "75 percent solution to environments in general," Thompson says.

There are a few ways to make a camouflage pattern work in multiple environments. One is to make sure it has the right number of colors. "Three would not be enough; 12 would be too many, because they would just get lost," Thompson says. He thinks seven is the sweet spot. These colors—greens and browns and beiges—all need to have warm overtones. "Most things in nature have some level of warmth in them," he says. "Even a building—it came from stone and likely grew a little bit of green stuff on it. Very few things remain cold." Also very important for a camo pattern is that it should have a lot of highlights, lowlights, gradients, and fades; no two outfits should be identical. As Thompson notes: "If you have all of your guys kind of looking the same, then as soon as you spot one guy, you can very easily pick out the rest, right?"

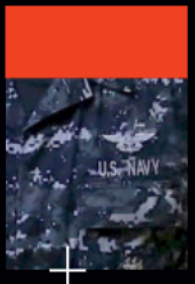
MultiCam is so ubiquitous that you can buy a camping chair or baby carrier in the camouflage pattern. You may see it on police officers, SWAT teams, ICE agents, or your average January 6 rioter.

The design students didn't start out in the field or on a hunting range. "You start in your Adobe suite, right?" Thompson says. "Go right in digitally, create it, print it, make uniforms out of it. Tweak, tweak, tweak, tweak, tweak." It was a lot of guesswork. There wasn't really a reliable measurement for testing the effectiveness of camo. "The human eye and the user and the guy in the field know what's good or bad, but to make that be a test that you could replicate across different forces would be very, very hard," Thompson says.

And yet, Crye Precision was pretty sure it had found something special. In the early 2000s, they presented their concept for multi-environment camo to the United States military. Crye made it clear that they intended to patent this pattern, an early design of which was called Scorpion. In 2004 they did, and christened it MultiCam. Around that same time, when the military had an open call for submissions for a new Army camo, Crye proposed MultiCam. It was rejected.

Instead, the US Army announced that it had designed its own version of an all-purpose camouflage pattern that could blend in with most environments. It was called Universal Camouflage Pattern (UCP)—a digital, pixelated pattern that looked as if someone had uploaded an image of camouflage in really low resolution. When UCP was widely adopted throughout the Army in 2005, it became, in the words of costume historian and journalist Charles McFarlane, "one of the most dunked-on camo patterns of all time." Kit Parker, a Harvard professor and Army reservist who served in Afghanistan in 2009, was

IN THE EARLY AUGHTS, EVERY US MILITARY BRANCH WANTED ITS OWN DIGITAL CAMOUFLAGE, WHETHER OR NOT IT WAS ACTUALLY PRACTICAL.



THE US NAVY DEVELOPED A BLUE DIGITAL CAMO UNIFORM, WHICH WAS SUPPOSED TO HIDE STAINS, BUT MOST BELIEVED IT MEANT TO MATCH THE OCEAN.

WITH SOME OF THESE "DIGITAL" CAMOS, FASHION WAS TAKING PRECEDENCE OVER SAFETY.

PREVIOUS SPREAD: GETTY IMAGES; STYLING BY LAURENCE ELLIS

wearing UCP. "We were getting shot at by these Chechen snipers from a long way away," he told journalist Ilya Marritz. "It was like I had a road flare duct-taped on my forehead."

The only soldiers who could essentially opt out of wearing UCP were members of the US Special Operations Forces. Elite teams like Delta Force, SEAL Team Six, and the Green Berets get a little more wiggle room when it comes to their clothing. "Every unit, whether conventional or special, has what's called a tactical standard operating procedure, or blue book," a paratrooper in the 82nd Airborne tells me. The blue book will outline the "third-party items you're allowed to wear." For Special Forces, "they're usually pretty lenient." He says he has a buddy in special ops who wears sneakers, and he has heard of someone who wears Vans high-tops.

As such, Special Forces were the perfect audience for MultiCam. This cutting-edge camo started being worn by some of the most elite soldiers in the United States military, many of whom had met Thompson and Crye during the duo's many trips to Fort Benning. "Those are the people who have the ability to make their own decisions," says Thompson, "and are also maybe a little more open to some of the crazy stuff." Crye started to produce runs of their camo, selling their own MultiCam products in the early days of ecommerce and also licensing the pattern.

Around this time, the culture of the Special Forces started to change. Before the War on Terror, elite teams were small and secretive; very few members of the military knew what they were doing. "Look at photos of the first Special Forces units going into Afghanistan in 2001," says McFarlane. "They look like a suburban dad on a fishing trip." As the number of special operators grew, the whole Army could see them fast-roping down from helicopters, breaking down doors, storming houses of suspected terrorists—often in MultiCam. Same with the popular video game *Call of Duty* and movies like *Zero Dark 30*, *American Sniper*, and *Act of Valor* (which featured active-duty Navy SEALs). In a confusing and unpopular war, stories of Special Operators offered rare victories the United States military could claim.

Special Forces started to develop a new image in the popular imagination, says McFarlane: "Dudes with huge beards and long hair and just totally ripped and just wearing lots of technical gear." Because Special Forces were so admired and idolized, regular infantry soldiers would buy MultiCam backpacks or accessories to emulate them. Everyone wanted to wear MultiCam—not only to cosplay but also to get away from the ugly digital UCP pattern. Including, eventually, the US Army itself.

Although UCP was deployed to Amer-

Because Special Forces were so admired and idolized, regular infantry soldiers would buy MultiCam backpacks or accessories to emulate them.

AN AMERICAN SOLDIER TRAINS IRAQI SPECIAL FORCES IN 2003 WITH MISMATCHED CAMO PATTERNS ON HIS PLATE CARRIER AND PANTS.

AT NEW YORK FASHION WEEK IN 2020, VIRGIL ABLOH AND DRAKE WEAR MATCHING MULLTICAM RAIN SHELLS BY ARC'TERYX LEAF.

AN ICE AGENT SPRAYS PEPPER SPRAY AT A PROTESTER IN MINNEAPOLIS, MINNESOTA, ON JANUARY 7, 2026.

FROM TOP: AHMAD AL-RUBAYE/GETTY IMAGES; BENNETT RAGLIN/GETTY IMAGES; ALEX KORMANN/GETTY IMAGES

STYLING BY LAURENCE ELLIS

ican troops all over the world, it became increasingly associated with Iraq: a hated, unsuccessful pattern for a hated, unsuccessful war. In 2010, when the Obama administration was trying to distance itself from Iraq, the military was instructed to get rid of the UCP pattern. And so, to quickly supply a troop surge in Afghanistan, it turned to the most readily available replacement camo: MultiCam.

Even though the US military called its pattern OEFCP (Operation Enduring Freedom Camouflage Pattern), it was MultiCam from Crye Precision, bought in bulk when roughly 100,000 members of the conventional forces were deployed to Afghanistan. Then, in 2014, the Army announced that its in-house camo team had finally developed a new pattern: Operational Camouflage Pattern, or OCP. As McFarlane believes: OCP is "basically MultiCam without the branding." If you view two swaths side by side, you can see that OCP is ever so slightly more brown. There's a reason they look so similar: Both are inspired by Scorpion, the original pattern that Crye presented to the US government.

In a few niche corners of the internet, debate still simmers over whether Crye had the right to trademark MultiCam or whether the Army had the right to make its own version. Truly, it doesn't matter. What matters is that, because of this whole saga, some version of MultiCam or OCP or Scorpion is everywhere. The militaries of Australia, Georgia, Denmark, Belgium, Portugal, Argentina, Chile, Malta, and France all wear variants of MultiCam uniforms—some specifically customized by Crye Precision. Soldiers fighting for both Russia and Ukraine do too; they don colored armbands to tell who is on what side. Even the Taliban wear MultiCam. In January 2026, the Minnesota National Guard wore bright yellow vests over their camouflage in part "to help distinguish them from other agencies in similar uniforms."

Even civilians are not immune from the influence of Special Forces. In February 2020, Drake and the late Virgil Abloh sat front row at a New York Fashion Week event wearing matching MultiCam rain shells.

MultiCam has trickled down from Special Forces to all kinds of law enforcement: American SWAT teams, municipal police, teams within the FBI, US Marshals, Drug Enforcement, and Border Patrol all dress like Bradley Cooper in *American Sniper*. ICE also wears a mixture of civilian clothes and MultiCam, and in January, Crye Precision was awarded a nearly $40,000 contract to provide cold-weather gear for Border Patrol in Maine. Although there have been a number of camo companies attempting to rival MultiCam's ubiquity (notably the impressionist looking A-Tacs and the animalistic Kryptek), none of them seem to hold a candle. "I think the fact of the matter is, there's been no other pattern that's proven," Thompson says proudly.

Even civilians are not immune from the influence of Special Forces and their camo of choice. In February 2020, Drake and the late Virgil Abloh sat front row at a New York Fashion Week event wearing matching MultiCam rain shells, made by Arc'teryx LEAF (Law Enforcement and Armed Forces, which has since rebranded to Arc'teryx Pro) and sold for more than $1,000. The rareness and exclusivity of the jackets instantly turned them into grails, and High Snobiety published an article titled "You Can't Buy Virgil Abloh & Drake's Matching Arc'teryx Jackets, Unless You're in the Army." This turned out to be untrue, and eventually anyone could buy MultiCam jackets in a lot of places, including in a collection that Outdoor Research made called Allies.

"People are gravitating to those tactically adjacent products and using them as fashion in their 'gorpcore' wardrobe," says Katarzyna Schoewe, VP of design and product innovation at Outdoor Research. "Tactical gear feels like it's at the root of the gorpcore trend." (Gorpcore is a fashion phenomenon where people don hiking gear as street wear).

It's easy to lampoon these trend followers, who it's assumed (perhaps falsely) have never gone hunting and don't even know a member of the armed forces. What right do they have to MultiCam? The truth is, they might have the most authentic claim: It was made in Brooklyn by art school grads, after all.

AVERY TRUFELMAN *is the host and producer of the podcast* Articles of Interest.

AI JOE

How to train a model for war.

AT THE START of this year, the newly restyled US Department of War proclaimed that the American military "will become an 'AI-first' warfighting force," "unleashing" AI agents on everything "from campaign planning to kill chain execution." Less than two months later, the Trump administration unleashed its AI-fueled attacks on Iran—and some of the agents balked. Department officials went head-to-head with Anthropic executives over the terms of a roughly $200 million contract. The company wanted to limit the use of its models in autonomous weapons. Defense Secretary Pete Hegseth was having none of it and declared Anthropic a supply-chain risk—prompting the company to file a pair of federal lawsuits.

While Anthropic might have misgivings about providing the US military with unfettered access to its AI models, some startups are building advanced AI specifically for military applications. Smack Technologies, which announced a $32 million funding round in early March, is developing models that it says will soon surpass Claude's capabilities when it comes to planning and executing military operations. And, unlike Anthropic, the startup appears less concerned with banning specific types of military use.

"When you serve in the military, you take an oath you're going to serve honorably, lawfully, in accordance with the rules of war," says CEO Andy Markoff. "To me, the people who deploy the technology and make sure it is used ethically need to be in a uniform."

Markoff is hardly a regular AI executive. A former officer in the US Marine Forces Special Operations Command, he helped execute high-stakes special forces operations in Iraq and Afghanistan. He cofounded Smack with Clint Alanis, another ex-Marine, and Dan Gould, a computer scientist who previously worked as the VP of technology at Tinder.

Smack's models learn to identify optimal mission plans through a process of trial and error, similar to how Google trained its 2015 program AlphaGo. In Smack's case, the strategy involves running the model through various war game scenarios and having expert analysts provide a signal that tells the model if its chosen strategy will pay off. The startup may not have the budget of a conventional frontier AI lab, but according to Markoff it's spending millions to train its first AI models.

The current furor over military AI, Markoff says, obscures the fact that today's large language models are not optimized for use in combat. General-purpose models like Claude are good at summarizing reports, he says. But they're not originally trained on military data and lack a human-level understanding of the physical world, making them ill-suited to controlling physical hardware. "I can tell you they are absolutely not capable of target identification," Markoff claims.

"No one that I'm aware of in the Department of War is talking about fully automating the kill chain," he claims, referring to the steps involved in making decisions on the use of deadly force.

The US and other militaries already

BY
WILL KNIGHT

ILLUSTRATION BY
JACQUI VANLIEW

use autonomous weapons in certain situations, including in missile defense systems that need to react at superhuman speeds.

"The US and over 30 other states are already deploying weapon systems with varying degrees of autonomy, including some I would define as fully autonomous," claims Rebecca Crootof, an authority on the legal issues surrounding autonomous weapons at the University of Richmond School of Law.

In the future, specialized models like the one Smack is working on could be used for mission planning purposes, too, according to Markoff. The company's models are meant to help commanders automate much of the drudgery involved in sketching out mission plans. Planning military missions is still typically done manually with whiteboards and notepads, Markoff says.

If the US went to war with Russia or China, Markoff says, automated decision-making could offer the US a much needed "decision dominance."

But it's still an open question whether AI could be used reliably in such circumstances. One recent experiment, run by a researcher at King's College London, alarmingly showed that LLMs tended to escalate nuclear conflicts in war games.

Recent conflicts, particularly the war between Russia and Ukraine, have highlighted the importance of low-cost semiautonomous systems built with commercial hardware and software. In 2023, I wrote about the US Navy testing new kinds of autonomous systems in the Persian Gulf as a way to identify Iranian drones, among other things.

Some experts say that there needs to be clearer red lines around how AI is deployed by the military, especially given the open-ended terms of contracts currently being signed.

Anna Hehir, head of military AI governance at the Future of Life Institute, a nonprofit that opposes the development of AI-controlled autonomous weapons, says that even if Anthropic's models are not used to control fully autonomous systems now, they could be integrated into the kill chain in problematic ways.

"AI is too unreliable, unpredictable, and unexplainable to be used in such high-stakes scenarios," Hehir claims. "These systems cannot recognize who is a combatant and who is a child, let alone the act of surrender."

Anthropic declined to comment. A source familiar with how its models are integrated into the military's Maven platform says, "Claude can be used for intelligence analysis as part of the cycle of missions," adding, "humans make decisions on targeting for any model used in such workflows."

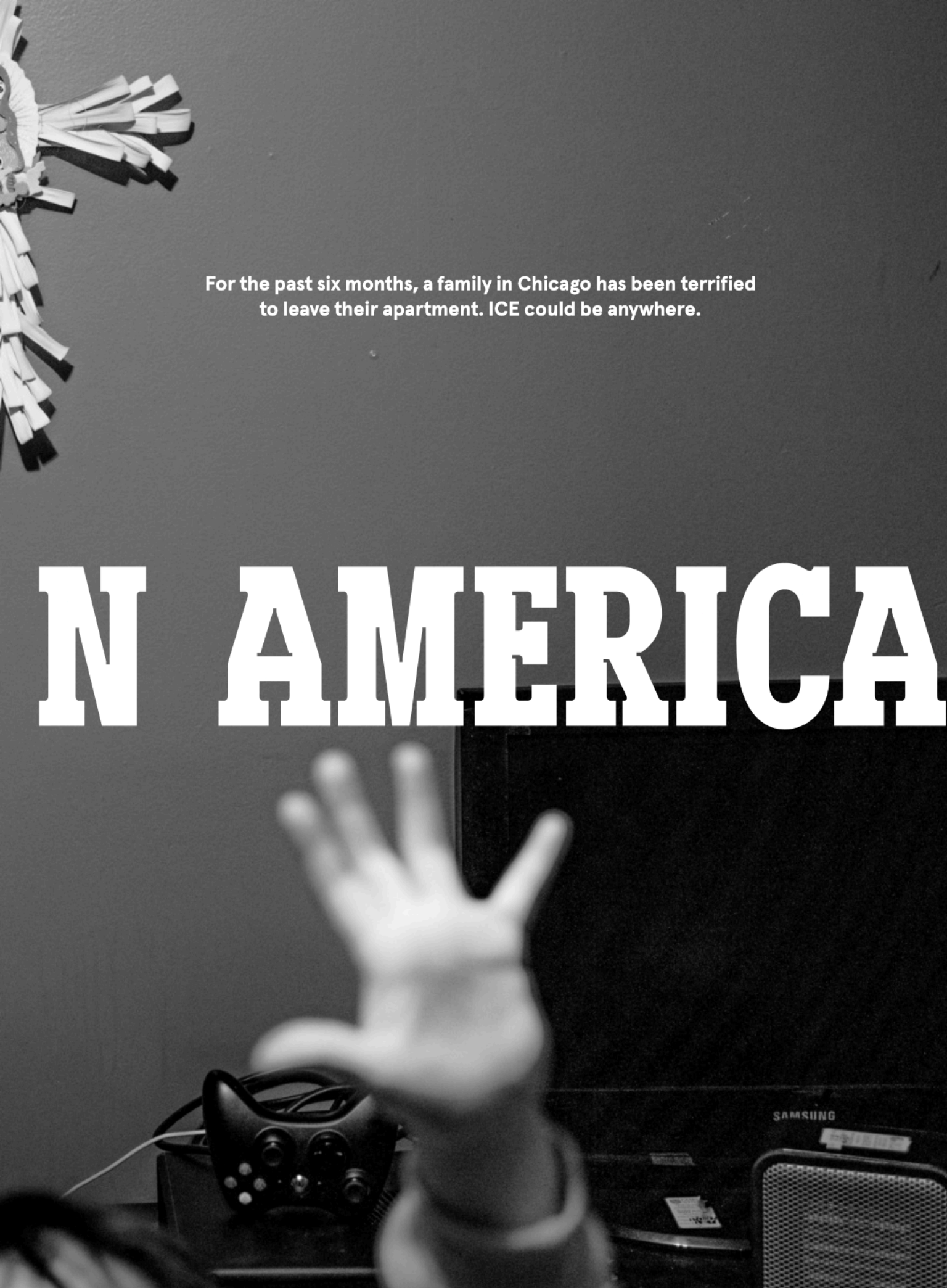
Markoff says that autonomy will run up against the chaos that descends on the ground during any conflict. "I have never executed an operation in the real world that even went 50 percent according to plan, and that's not going to change," he says. W

WILL KNIGHT *is a senior writer for* WIRED, *covering artificial intelligence. He writes the* AI Lab *newsletter.*

HIDING I

BY MADDY CROWELL

PHOTOGRAPHS BY
SEBASTIÁN HIDALGO


For the past six months, a family in Chicago has been terrified
to leave their apartment. ICE could be anywhere.
N AMERICA
SAMSUNG

When I arrived at Ava and Sam's front steps last December, every shade was drawn—as if nobody lived there at all.

AT

AROUND 7:30 AM on Halloween, Ava and Sam were taking their two kids to school when their upstairs neighbor rushed toward them on the street. "You shouldn't be out right now," she told them. ICE vans were just around the corner. Ava felt her body go numb. The day before, her coworker—another undocumented woman she cleaned houses with—told her about how she'd seen an ICE van parked behind her while she was taking her lunch break in her car. All the images Ava and Sam had been watching, the ones that popped up on their TikTok of ICE agents arresting people shopping at Home Depots and Walmarts, all the things they'd been hearing in bits and pieces from her husband's coworkers, their caseworker, her children's school teachers about what to do if ICE comes—it was finally here at their doorstep.

They accepted a ride from their neighbor. All day, Ava felt paranoid, like ICE was watching her. Who would take care of her young kids if she or her husband got taken? She told her boss, who ran a housekeeping business, that she felt like it was too risky to be cleaning properties; her boss agreed. At the end of the day, her boss dropped her off at home, taking side streets and alleys. Then Ava's world grew lonelier than she'd ever known.

The ICE raids in Chicago that have terrorized immigrant neighborhoods like Ava and Sam's have been both highly performative and extremely random. Six weeks earlier, on September 9, Greg Bovino, the G.I. Joe look-alike who previously served as ICE's "commander-at-large," arrived in town with a caravan of unmarked, black-tinted vans to patrol Chicago's immigrant-heavy neighborhoods. Three days later, ICE agents shot and killed Silverio Villegas González, an undocumented father of two from Mexico who worked as a line cook, and who had no criminal record, after he tried to drive away from them. ICE officers began lurking on sidewalks, downtown, at grocery stores, at the Cook County courthouses, in parking lots, at intersections, in alleys, and in neighborhoods like Ava and Sam's.

By the end of September, allegedly following a "tip" about reported gang activity—later found to be a complaint about squatters—ICE agents swarmed a South Side apartment building in the middle of the night, rappelling down from a Black Hawk helicopter and patrolling the sidewalk outside with masks and rifles, arresting 37 people. They kicked down doors, leafed through bookshelves, and upturned mattresses. In November, they violently pulled a Colombian teacher from the day care center where she worked, while school was in session. It began to feel like they could take anyone, at any time. Sam started to catch glimpses of the arrests and deportations

from coworkers and Facebook groups. The news trickled in through Ava's phone, where she watched video after video on TikTok. The more she clicked, the more videos appeared.

Ava, whose name I've changed to protect her identity, crossed the border before Donald Trump would be sworn into office for a second time. Her husband, whom I'll call Sam, had arrived in America in 2022; paying coyotes $12,000 he'd borrowed from family members to make the seven-day journey on foot. "It's a very heavy, heavy decision to make the choice to abandon your children and your family," Sam told me. "You don't know if you'll see your family again." After the dangerous journey, he settled in Chicago, where he found a job in construction. He worked grueling nine-hour shifts, six days a week, bringing in roughly $600 a week. He sent as much money home to Ava as he could. When he was off work, exhausted and lonely, he'd call his wife and kids on video chats. Their daughter, a baby at the time, would throw a tantrum every time. He used to put her to bed every night; now, when her mother put her to bed, she'd reach up instinctively searching for her father's beard. When she realized it wasn't there, she'd cry. It took a month for her to learn how to sleep again. Their older son struggled more. One day, he came home from school sobbing. Ava asked what was wrong. He had seen his friend's father pick him up from school on his motorbike, he told her—just like his father used to pick him up. "When will we see him again?" He asked over and over.

The family weighed their options: It was too risky for Ava to cross the border alone with such young kids, and they couldn't afford to pay another coyote. But staying in Mexico felt equally dangerous. Drug cartels patrolled their town, recruiting kids as young as 13; police offered little protection. One day, Ava got a panicked call from her brother. His two children had been *secuestro exprés*, "express-kidnapped"—a common occurrence in their area of Mexico where gang members lure young kids with candy or sometimes threats, then hold them hostage until the parents pay for their release. Ava's brother scrounged together $3,000—selling everything he owned, including his small home, to get his kids back.

Ava and Sam wanted a better future for their children. They heard from friends that they could apply for Temporary Protected Status, a Department of Homeland Security program that offers emergency asylum to people from countries with ongoing armed conflict, environmental disasters, or extraordinary conditions. For many, it is often the first step to full asylum status. (The Trump administration has moved to revoke the status for 11 countries and does not consider Mexico to be a qualifying country.) Ava applied during the Biden presidency and, after about a year of waiting, was notified that she'd been granted an interview in the United States that would expire in 15 days.

Frantically, she packed what she could in a large suitcase, gathered the kids on their first airplane ride, then took a taxi to El Paso, where she found herself, quite suddenly, before a phalanx of US Border Patrol officers.

Border Patrol agents took Ava's DNA and biometrics and confiscated her passport. They did a body exam and made the family strip down to their innermost layers. But Ava still felt that the Border Patrol agents treated them warmly. "I didn't think they were rude or cold or harsh," she recalled. She'd heard the interview could take all day, but by noon she was free to walk out of the building and into Texas. She called Sam, who booked the family plane tickets to Chicago. He gave her instructions on what to do at the airport, where everything was in English—a language she'd yet to grasp. She navigated it in a maze of confusion, pulling out her boarding pass every so often so someone could point her in the right direction. After the plane dipped to the misty ground at Chicago's Midway Airport, they cleared customs and found Sam waiting for them.

"I was so happy," Ava told me. "After you don't see your family for two years, it was thrilling." Sam added, " We hugged each other very, very tightly."

Chicago was cold, and a little overwhelming. But it was beautiful. They took a drive by the lake. "It's so big!" their

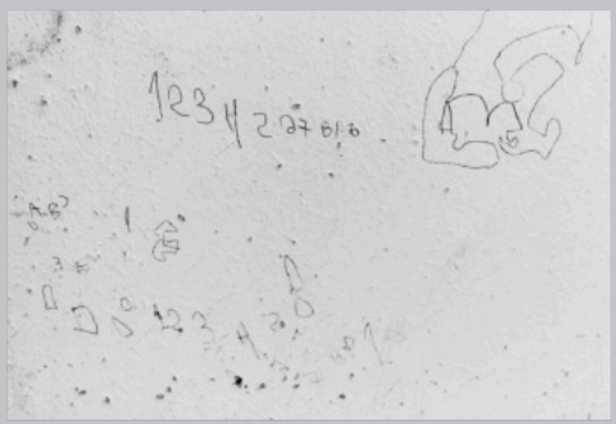
Poop

daughter squealed. The kids had lots of questions: What temperature was the lake? Could they swim in it? *When*? Soon after she arrived, the family splurged on an Uber to Chicago's sprawling downtown, where they stared at themselves in The Bean, a life-size lima-bean-shaped piece of public art that reflected the city skyline behind them. Their daughter had been diagnosed with a developmental condition, and they'd managed to find a clinic to assist with her special needs. They started taking English classes. Chicago's harsh winter turned to spring, which yielded a beautiful summer. Every day was memorable. "We still felt comfortable enough to go out, go for walks, go to the store, get groceries," Ava told me when we met at her place last December. And then, nearly a year into her new life in America, the ICE raids began. "Right now, frankly, we're just really scared."

The family lives in one of Chicago's many Spanish-speaking neighborhoods, which have historically been friendly to immigrants. The neighborhood, once lively, was barren. When I arrived at Ava's front steps last December, the doorbell went unanswered even though we'd set an appointment. Outside the house, every shade was drawn—as if nobody lived there at all. After confirming through her caseworker that it was safe to let me in, Ava opened the door. She wore a soft pink sweater with a bow in her hair and smiled warmly, offering instant coffee and biscuits as we sat at her dining table. The bedrooms in their apartment were separated by a sheet hanging from the ceiling. It was a week before Christmas, and they'd draped a stream of tinsel over the windows. Sam, who appeared briefly to shake my hand on his way to work, had taken to biking there as fast as he could, even in below-zero temperatures with a freezing windchill, because it minimized the amount of time he would be visible outside. The rest of the time, they hide inside. "I just feel a sense of despair," Ava told me, fighting back tears. "And stir-crazy."

It's easy in today's world to feel watched. Digital footprints are vast: Every email, text, or social media account can be tracked and monitored by someone. Cameras at intersections record license plates. CCTV footage inside grocery stores and shops catches faces. The digital technology ICE has at its disposal—under the $85 billion budget Trump allocated to the agency with his "One Big Beautiful Bill"—is even more vast. ICE has nearly tripled its spending on digital surveillance technology since 2015. The agency uses license-plate-reader apps that pull up a driver's entire bio and face-recognition technology that the agency says can identify a person from a few feet away. Last year, a $2 million Department of Homeland Security contract with an Israeli spyware company called Paragon Solutions granted ICE access to Graphite, software that can gain unauthorized access to mobile phones. "ICE is really in this moment where it's pooling as much data together as it can to create a broad surveillance network," Will Owen, who works for the Surveillance Technology Oversight Project, told me. "And it's increasing exponentially, because they have the resources to invest in broader surveillance." Among the most high-profile of these technologies is Palantir's ELITE system, which creates a visual map of so-called "targets"—suspected undocumented immigrants whose data is mined from places like the Department of Health and Human Services, US Citizenship and Immigration Services, license-plate-reader logs, arrest records, jail bookings, financial records, and even social media.

Yet for all the Orwellian levels of surveillance ICE has at its disposal, the apparent randomness of many immigration raids suggests an agency unready to harness its own godlike technologies. ICE officers have stormed farms, construction sites, apartments, offices, grocery stores, cafés, and intersections, searching for undocumented workers in crude, sweeping dragnets. They have stopped people on the streets—many of whom are American citizens—based on the color of their skin. They have mistaken mothers for gang leaders and a Hmong refugee for a sex offender. They have accidentally detained US citizens at gunpoint. They've forced so many families like Sam and Ava to hide. "Now we're inside all the time," Sam told me. They were



Ava and Sam's son has grown withdrawn and has nightmares about the family being discovered.

scared to take their trash out. "You don't know if you'll see them along the way or encounter them on a walk. You don't know if you'll be able to come back."

Ava hadn't heard that the government could monitor her phone. She spends most of her day looking at it, inside her small apartment, talking to her mother back home in Mexico and watching videos of more ICE arrests on TikTok while Sam is at work. In the months since Halloween, she's lost her income, and her freedom. When absolutely necessary, she goes to the grocery store. Sometimes, volunteers drop groceries off for the family—anything that can minimize the risks of being seen outside. "I was just trying to do honest work, and it just feels really scary," she told me. Living in constant fear had started to take a physical toll. One morning, a few weeks into news about the raids, Ava woke up and found that her right arm was numb. Then she and Sam noticed that when she blinked, only her left eye would move. For weeks, the right side of her body was half-paralyzed. Sam was panicked to see her like this. But on the surface he stayed calm. In life he saw challenges as hidden blessings. "My method is always to try to stay as calm as possible and reassure her, like, you'll get better," Sam said. A month and a half later, slowly, Ava regained movement on her right side.

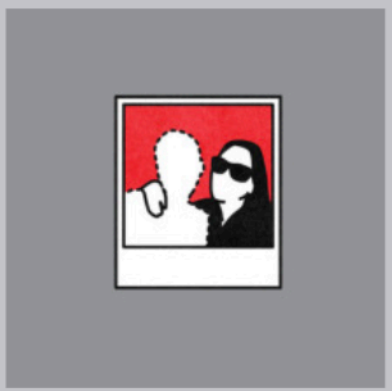
Ever since ICE first appeared in Chicago last fall, the mood had grown tense and paranoid. But the resistance was strong too. Signs had appeared in windows as if in a political election: HANDS OFF CHICAGO. Restaurants in Hispanic neighborhoods began locking their doors during business hours, and some posted signs banning anyone wearing a balaclava or mask from entering. Chicagoans took to wearing whistles around their necks to be able to alert the public if an ICE officer was seen. Residents honked horns and pulled out their phones if an ICE van was spotted. Protesters appeared all over the city and outside the ICE facility in Broadview, a suburb away. ICE agents responded with a force seen in authoritarian countries: tear gas and body-slamming people to the ground. One woman, a US citizen named Marimar Martinez, was shot five times by a Border Patrol agent for driving "aggressively" while protesting. ("Five shots, seven holes. I take pride in my shooting skills," the agent allegedly texted his colleagues after news of the shooting broke.) Ava and Sam kept hearing about all of this from their apartment, in trickles, through social media. Sometimes, Ava felt responsible. One day, at the end of January, she woke up to the news on TikTok that agents had shot a

FUZZY
FRIENDS

man—an American man—in Minneapolis. "I'm seeing they killed another man, and I feel terrible," she told me.

After Ava stopped working, the family started worrying about money. Sam reduced his lunch hour to 30 minutes, which brought in a little extra cash each week. But their daughter's special-needs appointments cost money, and so did rent, groceries, and laundry. Ava realized she'd need to try to work again. "I'm afraid," Ava said. "But we have necessities." She created handwritten résumés with her name and number and her experience and began dropping them off at Spanish-speaking stores nearby: at the local laundromat, a bakery, a taqueria. She explained on the forms that she didn't speak English but that she was a fast learner. "I know it's a risk," she told me. "I feel unsure if I'm safe, but we have to go out." The alternative felt riskier.

One day, in January, Sam was at work when a sharp piece of plastic flew from a machine and lodged in his eye. When he came home that night, his eye was swollen, and he had a lump on his eyeball. A white dot obstructed his vision. Ava urged him to go to the hospital, but he refused; he was too scared. What if ICE was lurking at the parking lot or in the lobby? If he got deported, what would the family do? For two days, he didn't go to work. He lay in bed, hoping it would heal. But the pain in his eye was excruciating and had started to extend deep into his skull. They began to fear he might lose his sight. Finally, he relented and sought medical care while Ava waited nervously at home, next to her phone, anxiously anticipating an update. A few hours later, to her immense relief, Sam returned home with medicine. Their joy was immediately supplanted with a fear over how they would pay the hospital bill, which she'd heard could be wildly expensive, especially without insurance.



By the end of January, the stress of the situation was starting to feel untenable. They talked about returning to Mexico, but that felt more dangerous for their kids. Ava had frequent headaches, and felt nervous and lonely constantly. In Mexico, she was used to living with her mother—this was the first time in her life she'd ever been alone for so long. She and Sam took virtual training courses at a local nonprofit on what to do if one of them was arrested by ICE: *Never let anybody in unless they have a warrant signed by a judge. Ask the agents to leave the warrant in the mailbox or put it up against the window. Never open the door. If you are detained in public, remain silent and request an attorney*. Together, they came up with a contingency plan. They filled out emergency paperwork with their families' contact information back home in Mexico.

By the end of January, the stress of the situation was starting to feel untenable.

Since September, when the raids began, they'd stopped doing anything outside as a family. If one of their kids had a performance or presentation at school that was open to parents, one of them always stayed behind. Their daughter was still too young to grasp what was going on, but they saw how the stress was overwhelming their son. He'd grown withdrawn and took, increasingly, to his phone. He struggled to understand the English in his classes. He started having nightmares. One evening, in the middle of the night, they awoke to the sound of their son screaming, as he ran into the kitchen and hid in a corner. "Get down! Get down! They're gonna see us!" he yelled. Confused, they realized he had been sleep-walking.

As signs of spring began to poke through a brutally cold winter, Ava and Sam watched as the world's attention turned to other things: the strange kidnapping of Nicolás Maduro, the killing of the Mexican drug lord "El Mencho," and now, a new war in Iran. ICE, at least ostensibly, had moved onto other cities. But Ava and Sam were cautioned not to become cavalier. ICE was still lurking. So they stayed cautious, and cautiously optimistic. Their kids were starting to adjust better to life in America—bringing homework and artwork from school, talking about their dreams for the future. "When we're home, honestly, it's all joy," Ava told me. "We play with the kids; we spend a lot of time together." Every morning, they awake as a family around 7 am. Ava makes the kids toast and Choco Milk, and instant coffee for herself and Sam. She does her daughter's hair and gets her dressed for the day. Then Sam walks their son to school. When he returns, they have a couple of hours together before he has to leave for work. In those brief hours, everything about their life is normal and calm, mundane even, as if there was no border between the walls of their house and the ever-watchful eye of the world outside.

MADDY CROWELL
is a journalist based in New York.

GQSPORTS
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ART BY PAULINE MAURUSCHAT

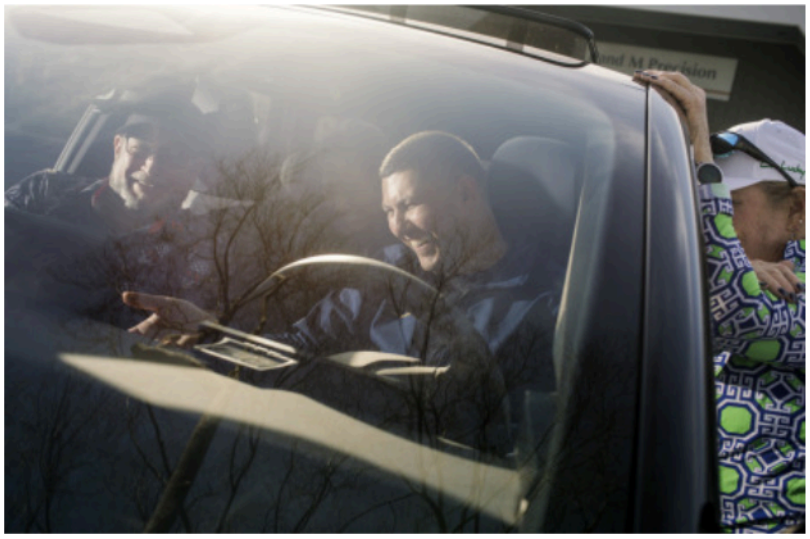
The Fisker Liberation Movement

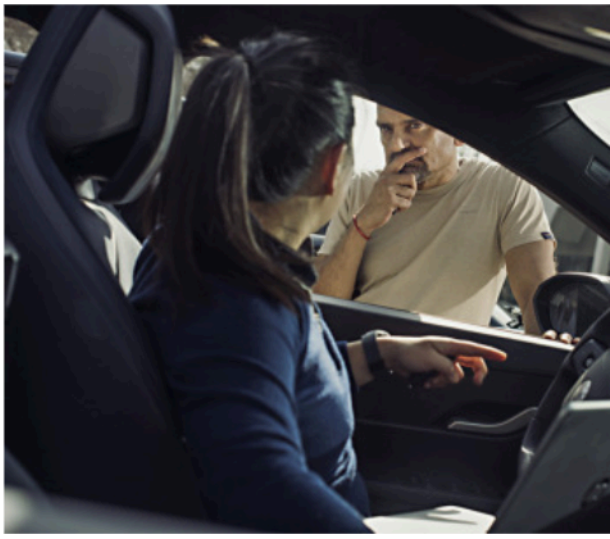
When an EV company went out of business in 2024, its biggest fans saw an opportunity to bring the "right to repair" to the masses.

BY AARIAN MARSHALL PHOTOGRAPHS BY ERIC RUBY

California

On an October evening in 2024, a gardener named Svein Hodne was driving home from vacation on a wind-buffeted coastal road in southwest Norway when his electric car began behaving strangely. Yellow and red warnings lit up its display. An alarm went off. The car lost power. Hodne barely managed to turn off the road and into a bus stop, right next to a graveyard and a church, before the car came to a stop. He was alone.





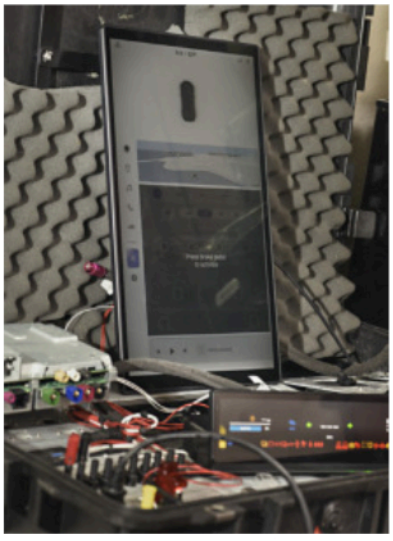
From left: Fisker owners having fun at a car reunion.

Fiskers, together for a meetup.

The FOA built its own device to help fix the Ocean's connectivity issues.

HIS PHONE BATTERY running low, Hodne quickly found a tow service online and called. He was told it would be about an hour wait. He went outside to stretch his legs, but it was dark, rainy, and in the mid-40s; he got back inside the car and closed the door behind him. Then everything went black. The car's screens and lights turned off. The heater and fan died. Most disconcerting, he heard the car doors lock shut. The windows wouldn't budge. As the glass started fogging up with condensation, he panicked.

"What if I run out of oxygen?" he remembered thinking. He worried, too, that the tow operator would have no clue how to free him from his bricked EV, a Mariana blue Fisker Ocean. Like any modern car, it was powered by proprietary software. But its maker, Fisker, had



declared bankruptcy four months earlier, and he couldn't find good information—or even a phone number—online. Who could he contact now?

Hodne went on Facebook and found a group called Fisker Owners Association. He posted: "I'm locked inside my car, waiting for rescue. Everything is black on the screens. Keys don't work. Restart doesn't work. NOTHING. Totally dead." Though Hodne didn't know it, he'd just set off a global chain reaction that rippled through a small but dedicated community of slightly peculiar electric vehicle fans.

In upstate New York, a group administrator saw the post. Since the Fisker bankruptcy, Cristian Fleming was doing everything he could to keep the Ocean on the road. (Never mind that his own Ocean had trouble getting up the steep dirt path to his home.) Fleming reached out to a close contact in Europe he thought would know someone who could help. That person sent Hodne a message: Call Jens Guthe in Norway, and included a number.

In his Oslo home office, Jens Guthe picked up the call from an unknown number. He'd previously had a 30-year banking career that took him all over the world. But Guthe's last few months had been eaten by the Ocean, too, as he had spent hours helping desperate owners hunt down increasingly hard-to-find parts for their cars. Hodne had just enough phone battery to explain the situation and connect Guthe with the tow driver, who had by now arrived. Guthe explained not only how to spark the battery but also the precise movements needed to open the Ocean's hood hinge, a technique, says Guthe, that seems built into only one other car, an Audi manufactured in the '90s.

For weeks afterward, Ocean owners from around the world who had seen his post sent him messages: Had he made it out alright? Moved, Hodne spent the $600 yearly fee to join the Fisker Owners Association with Fleming, Guthe, and some 4,000 other Ocean owners.

What he found was not so much an amateur car club but a volunteer-run multinational automotive company in the making. As many owners saw it, Fisker had built a flawed vehicle and then abandoned them when they needed help. If the company wouldn't be making good on years of software updates and replacement parts, then they would push the code and source the parts themselves. This was about more than an electric car, or a hobby, or even a community. It was about taking back control of an economy run by rent-seeking tech companies that will jack up prices until the day they drop you.

"I liked when I bought a car and I owned it," says Fleming, who is now the FOA's president. "Can this get interesting enough that people start going to these companies and saying, 'Just fuck off. Fuck off'? I've seen a world where things are actually nice, and it is not this."

For decades, consumer and tech advocates across the world have advocated for what's known as the "right to repair." They seek laws forcing companies to give customers the tools they need to fix the products they buy. Now the debate had come for a $70,000 luxury vehicle. The Ocean situation "is a canary in the coal mine for an economy populated by 'smart,' software-driven, connected things," says Paul Roberts, a security writer and right-to-repair activist. "How do we keep this from happening all over the place? How do we keep this from becoming an epidemic?"

Mulishly determined, borderline annoying, providentially skilled, relatively well-heeled, the FOA volunteers became soldiers for a tech liberation movement. They just might win.

F

FISKER FANS CAN point to many elements of its design and performance as appealing, but, on a basic level—it's pretty. Its designer, Henrik Fisker, worked at BMW, Ford, and Aston Martin before founding, over the course of a decade, two car companies that he named after himself. (The first, Fisker Automotive, which made a cult-classic plug-in hybrid called the Karma, also went bankrupt.) The sleek Ocean was a four-door SUV crossover that for some EV-curious buyers felt like a hardier and more spacious alternative to Tesla's offerings. It had inventive and charming design turns: a California mode, which lowered every window in the car with a push of a button; a little pull-out tray in the center console that fit a few tacos. Zippy and smooth, it was also a joy to drive. The company contracted with well-respected Austrian manufacturer Magna Steyr to build the car, which gave some nervous buyers peace of mind.

But the Ocean, drivers and technicians told me later, showed signs of having been rushed to production. Soon after it went on sale in 2023, drivers began reporting issues. A brief and incredibly incomplete list: sticky exterior door handles failed to open; glitchy gearshifts looked parked, then allowed the car to roll away; key fobs stopped working; confused software constantly threw false

alarms; software "updates" bricked cars, leaving owners with expensive, attractive sculptures; and 12-volt batteries that were usually responsible for powering up the vehicle or running its climate systems sometimes suddenly died, locking owners inside their cars. News headlines warned of trouble for the company legally responsible for fixing it all.

Owners started convening in online forums to discuss what they would do if the company went out of business. When Fisker officially filed for bankruptcy in June 2024, they mobilized, incorporating the Fisker Owners Association as a nonprofit and setting up an independent board. "We need to get organized if we have any chance of representing the owners' interests," José De Bardi, an early UK FOA member, told me at the time. He said he hadn't slept in 10 days, since the bankruptcy announcement.

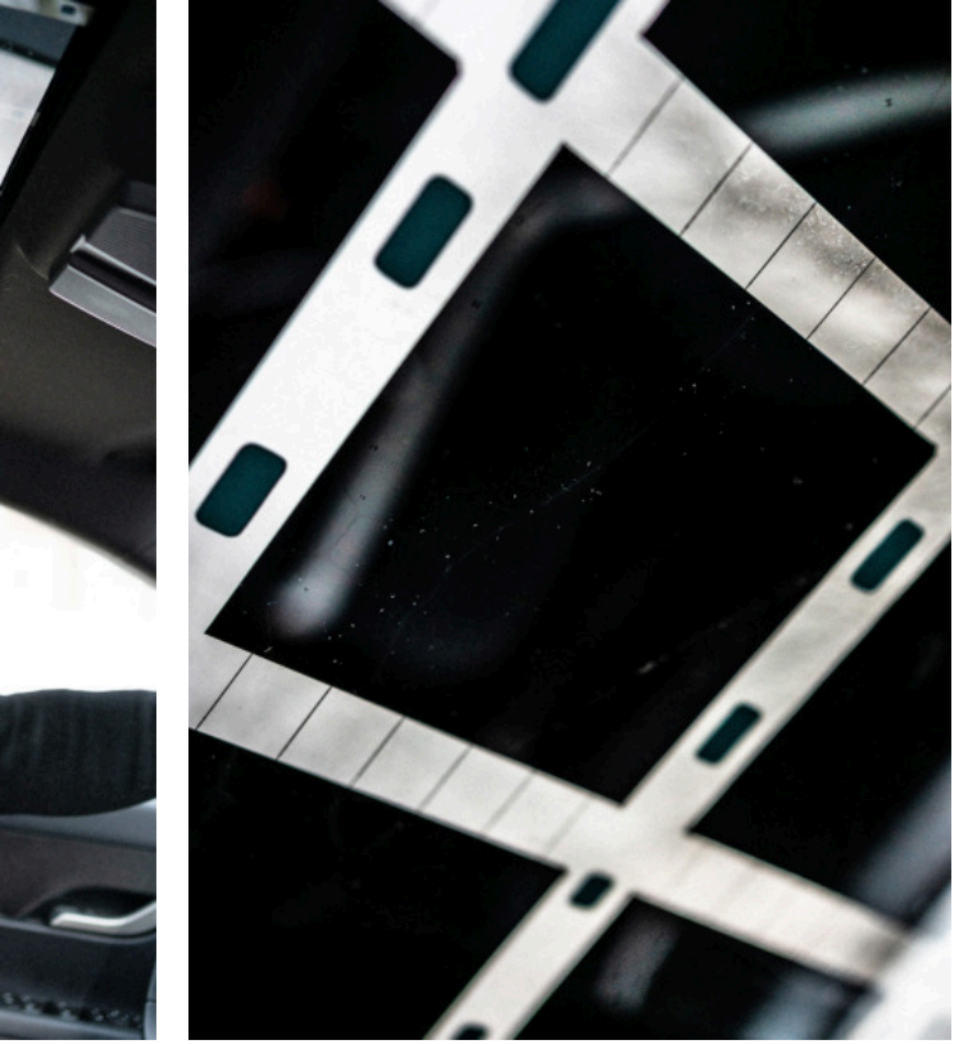
A few weeks later, in the summer of 2024, a New York bankruptcy lawyer named Daniel Shamah got a message from an acquaintance with a favor to ask: Would he mind meeting with a Fisker Ocean owner? Shamah had heard of Fisker, of course. The automaker's bankruptcy filing had made waves across the legal community. Shamah thought the meeting would involve giving some unfortunate person a few words of advice on owning a lemon. He thought those words would go something like this, he recalled months later: "It sucks, but you guys are kind of stuck." In a bankruptcy, whatever money is left over usually goes first to creditors like lenders. Ocean owners who wanted Fisker to pay to fix their cars would likely be left to fight others for scraps.

When Shamah signed onto the meeting, though, it wasn't with one owner, but with three, and they spoke not just for themselves but also for a legally incorporated nonprofit. Product owners don't usually get involved in manufacturers' legal wranglings. "I had never encountered this in bankruptcy before," Shamah says. Soon he was representing Fisker owners in a Delaware court and helped install Fleming as one of six representatives on a committee tasked with consulting on and helping to create the automaker's reorganization plan—a position, it seems, never before granted to a person simply representing a product's owners.

The legal team's objective was twofold: It wanted to make sure that Fisker, or whoever purchased its assets, would pay for US-based owners' recall repairs. (Eventually, the US federal government would oversee six recalls related to the Ocean.) More ambitiously, it wanted to guarantee that owners' cars would keep running by securing access to Ocean auto parts, the know-how needed to fix the cars, and the Fisker cloud.

That last bit was important because, like most modern cars, the Ocean depended on internet connectivity to run. The cloud enabled Ocean nice-to-haves, including the ability to remotely start and heat and cool the vehicle through Fisker's (often buggy) app. More critically, the cloud allowed Oceans to receive over-the-air software updates, necessary because the cars' software clearly had serious issues. Flawed software had already contributed to more than a hundred reports of sudden motor power loss and brake malfunctions, leading to at least two injuries, according to federal filings.

In spite of the Ocean's lemon-flavored reputation, the Fisker Owners Association wasn't the only party interested in the future of the vehicle. A New York City company called American Lease soon emerged as the most likely to license Fisker's remaining US assets, including its IP. American Lease rented cars to Uber and Lyft drivers. It was interested in Fisker because the city had announced plans to electrify its for-hire car system by 2030; in the meantime, it would ratchet up the share of required no-emission



Above: Cristian Fleming in his Ocean in upstate New York. Photographs by Ali Cherkis

Below: Majd Srour tinkering with his car—as he has done for years.

cars each year, in effect limiting new ride-hail licenses to gas-free rides. The company wanted Fisker's 3,300 unsold Oceans to rent to ride-hail drivers.

Like the association members, American Lease also wanted consistent access to Ocean parts and the company's cloud to stay online, and it was willing to pay millions to make that happen. But how much did the company really care about the car's existing owners? Quietly, the association's leadership harbored more paranoid questions: If American Lease ended up basically owning Fisker, would it find ways to pump desperate Ocean owners for cash by charging them more and more for updates? For owners trying to break free from modern car ownership, it might be another trap. They worried that, instead of escaping Fisker's iron grip on their car's workings, American Lease might take its place. Leadership held close, too, another, bigger ambition: What if, they wondered, the group of owners could own the IP instead.

W

WHEN ANYONE BUYS a car, the company that built it makes a promise: We will fix this when it breaks. This is true, literally, because all new cars are sold with manufacturer's warranties. But it's also a philosophical orientation, one that has existed from the beginning of automotive history.

"It does not please us to have the buyer's car wear out or become obsolete," wrote Henry Ford, the world's first great automotive industrialist (with the writer Samuel Crowther), in 1922. "We want the man who buys one of our products never to have to buy another. We never make an improvement that renders any previous model obsolete. The parts of a specific model are not only interchangeable with all other cars of that model, but they are interchangeable with similar parts on all the cars that we have turned out."

Car owners have taken the promise seriously. The Volkswagen Beetle was a cute car with a dynamite advertising campaign, but the 1960s saw it become a consumer darling partly because it was easy to repair and modify. (You can still buy the 1969 DIY manual *How to Keep Your Volkswagen Alive* on Amazon.) In the 1970s, Japan's Toyota began to dominate thanks to its simple, repeatable, and consistent mechanical designs, its conservative approach to the introduction of new technologies, and its clear and exhaustive manuals that helped technicians repair. Today, plenty of drivers' purchasing decisions are driven, subtly, by repair issues. The mass-market cars that tend to retain their value over time are, not coincidentally, the autos that are manufactured reliably, with parts that are easy to replace.

"The sales pitch to Americans for buying a car was about autonomy," says Leah Chan Grinvald, an intellectual property law scholar with the William S. Boyd School of Law at the University of Nevada, Las Vegas. "The idea was that it's going to give you a taste of freedom. You can drive where you want to drive, and you can repair it."

But as computerized systems made their way into more products, all sorts of manufacturers began to lock down their underlying software, requiring proprietary (and expensive) diagnostic tools to make changes or fix it. In 1998, the Digital Millennium Copyright Act gave manufacturers a novel path to lock out consumers by making it illegal to circumvent certain restrictions on software.

The makers of printers were among the first to apply the new provision to their products by creating ink cartridge refills incompatible with other manufacturers', then successfully litigating their right to do it in court. In 2009, Apple introduced a new five-pointed screw called the pentalobe to seal closed computers and phones. Consumer rights activists decried the move as an attempt to lock out unauthorized third-party repairers and owners who wanted to fiddle with their phones. By then, farmers had complained they were locked out of repairing their own tractors. McDonald's franchisees said they wanted to fix their frozen yogurt machines. Video game players hoped to customize their gaming systems.

The auto market's maverick stance didn't protect it against a turn toward software and the intellectual property lawyers who now defended it. Tesla led the game by starting its iterative design process with software first and promising that it would continuously update cars—and more quietly, fix bugs and make fixes ordered by federal recalls—through over-the-air software updates. Globally, automakers began to rejigger their vehicles' entire system architectures to allow centralized computers to control nearly everything. The trend is especially striking in electric vehicles, which are often designed from the software up and contain some 3,000 semiconductors per vehicle, up to three times what's seen in their gas-powered brethren.

Software also enabled a new potential revenue stream for manufacturers working against ever-thinning profit margins: subscriptions. In 2022, BMW's Korean subsidiary provoked global outcry after it floated the idea of charging drivers monthly fees to use their seat warmers. Still, automakers expect to make billions in coming years from subscriptions and additional charges that give drivers access to advanced driver assistance, security, and maintenance features.

Despite all this change, autos have a robust aftermarket parts industry, full of rich and powerful corporate players. Auto repair is worth over $80 billion in the US alone, and some 70 percent of American auto parts and services are supplied not by automakers' dealership networks but by independent suppliers and servicers.

From left: The group keeps multiples of everything it can find.

More Fisker parts.

Michael Rosito with replacement Ocean handles in California.

Which has led some consumer advocates to see right-to-repair fights in the auto industry—and battles fought by groups like the Fisker Owners Association—as a tip of the spear. These advocates pushed for a ballot initiative in Massachusetts that passed in 2020, requiring automakers to share data with owners—and third-party repairers—through a standardized, open access system. Automakers sued, arguing that open access to vehicle data was a security risk. As the lawsuit worked its way through the courts, Kia and Subaru even disabled some of their tech systems in the state, arguing that they couldn't comply with the law. Last year, a federal judge dismissed the companies' case. But the open-access system still hasn't been built. Meanwhile, auto-

When you buy a car, the company that built it makes a promise: We will fix it

when it breaks.

makers have argued that the majority of repairs already happen at independent repair shops. No other solutions, they say, are needed.

A

AS FISKER'S BANKRUPTCY proceedings dragged on in 2024, Ocean owners' dark prognosis improved. For now, American Lease, the company poised to license Fisker's intellectual property in the US, seemed happy enough to take Fisker Ocean owners along for the ride.

In the summer of that year, the association's leaders were careful to establish a friendly relationship with the company that might control their cars' fate. Fleming drove several times to meet with American Lease executive vice president Josh Bleiberg in the Bronx; at one point, Bleiberg had American Lease's techs fix Fleming's Ocean for free.

The two groups even began a loosely structured business partnership. Quickly realizing the limits of its nonprofit status, the association spun up a US-based parts company it named Tsunami Automotive and a European counterpart called Tidal Wave. Both were staffed by small, unpaid crews of volunteer tech and logistics experts and, unlike the nonprofit, could actually sign contracts to buy parts from auto suppliers and sell them, for a discounted price, to association members. American Lease and Tsunami even went in together on the shipment of car parts, sent from Fisker's Austrian factory, and stored them side by side in a warehouse.

But finding more of those parts had become a serious problem. Across the world, Oceans were failing. As Svein Hodne would learn while trapped on a Norwegian highway, the vehicle's hood took some finesse to open, but in two reported instances, vehicles' bolts loosened unbidden, causing the hoods to fly up in the middle of trips and crack cars' windshields. Thus, windshields were in demand. So were door handles, which sometimes didn't open and also lacked a crucial final finish, leading to cracking and disintegration in the sun. (If you didn't recognize an Ocean by its distinctive design, the door handles wrapped in tape might give it away.) Owners also desperately needed key fobs. Each had received just one oft-malfunctioning fob with their car. A Texas owner's toddler threw his in a pool; an Oregon owner's puppy used his as a chew toy; a Finnish driver lost his on a biking excursion and stranded himself in the mountains.

At first, Fisker's disorganization was the group's gain. The automaker had basically ghosted its parts suppliers and dealerships, who then heard through news reports about the FOA. Several reached out: We have this stuff lying around our warehouse, and Fisker isn't paying its bill. Do you want it? A San Jose importer-exporter named Michael Rosito had been a founding member of the association and now signed on to be the chief operating officer of Tsunami. He coordinated with freight drivers and shippers to get parts otherwise

Above: Engineer and volunteer Ocean mechanic Majd Srour heads to a Fisker Owners Association meetup from his home in San Jose.

Below: Srour works on his Ocean.

collecting dust in warehouses in Austria, factories in France, and dealerships scattered all over the US into Tsunami's three warehouses in California and New York. Several wealthy association owners, again, fronted the costs.

The European arm of the Fisker Owners Association made do in its own way. In Norway, now-retired banker Jens Guthe was able to locate a pallet of more than 200 water pumps just before it got sent back to China. This was fortunate, because the ones shipped with Oceans had a faulty epoxy coating on their circuit boards that would eventually leak, causing the vehicles' temperature systems to break and some Oceans to stall out while driving. (The water pumps were the subject of a recall in the US.) Guthe thought that all 300-some Norwegian FOA members would eventually need new pumps. So he devised a very Scandinavian communitarian solution: a water pump lottery. Each member put $15 into the pot, which he used to buy the pumps. Owners received water pumps whenever theirs happened to die. It was only fair.

But even if the group could get its hands on the right parts, association members quickly realized there weren't enough people to install them. They fretted that the liquidation of the auto manufacturer might also mean the liquidation of the know-how needed to keep the cars running around the world. Even before the bankruptcy filing, Ocean owners faced weeks-long waits as mostly mobile technicians traveled to their

areas. One former Fisker technician based in northern Virginia told me he had been dispatched in early 2024 to fix a Fisker executive's car in Michigan. The technician's own Ocean died along the way, stranding him in the cold at 2 in the morning.

The key to breaking both these logjams—the parts and the technician issue—turned out to require the same thing: a touch of corporate espionage. FOA volunteers worked their own Fisker contacts and hunted down executives on LinkedIn to ask for help. Some obliged.

One contingent convinced Fisker itself to host a technician training at its Southern California headquarters in the middle of the bankruptcy. There was "a whole lot of coercion and arm twisting," says Fleming. They made a list of 20-odd technicians with experience working on electric vehicles and asked them to attend for just the cost of travel. (Such training usually costs technicians thousands and is arranged months in advance.) Techs who traveled to the Fisker office park remember the vibes being a bit off. Employees knew their days were numbered. Oceans sat on lifts in various stages of assembly. The space where the techs trained was tidy, but papers scattered the floors of other offices. The training curriculum seemed hastily put together. "There wasn't a lot of organization to anything," one technician remembered.

Then someone, somewhere passed on a copy of an internal Fisker tool that let technicians remotely access any Ocean on the company's network. Volunteer engineers could use the tool to, for example, unlock cars for owners with troublesome fobs. Meanwhile, a handful of tech-minded volunteers in California, Canada, and Austria began reverse engineering the vehicle and quickly discovered that a series of vital vehicle modules had been left unencrypted. They could burrow into the car. This was legally dicey, and they knew they had to be careful. Messing with the Ocean's software might infringe on the company's intellectual property. Figuring out how the car worked from scratch, though, would allow them to avoid altering the company's proprietary software and potentially keep them in the legal clear.

The assists from within Fisker continued. Someone, somewhere received an Ocean "parts bible," a detailed list of every auto part and auto supplier for the vehicle. Volunteers representing the association, Tsunami, and Tidal Wave began reaching out to specific automotive suppliers and placing orders for parts.

In Europe, Guthe heard a rumor that a Polish subsidiary of the French company that made Ocean windshields had ferreted a few away somewhere in Eastern Europe. Over one of the countless Zoom meetings the European contingent held on Fridays, an association member in Sweden volunteered his own Polish wife to call the factory directly. She tracked down the glass.

In San Jose, engineer Majd Srour, essentially working two full-time jobs as he tried to reverse engineer the Ocean, helped figure out how to fix a persistent issue with the software that booted up the car. But the only way the car would accept the modified software was via a very cheap sort of USB stick usually found as freebies on the conference circuit. Another person on Srour's engineering team taught a Danish volunteer how to move the software onto the particular sticks, and that volunteer set up a makeshift workshop in her home creating more copies to send to owners. "I kind of hoped this was just a car," she told me. "Now it's a project."

It seemed that people with real auto experience were beginning to pay attention. One association leader got a message from Henrik Fisker himself: The Fisker founder wanted to know how to join the Fisker Owners Association.

IN OCTOBER 2024, the Fisker bankruptcy proceedings came to a close. American Lease would indeed buy nearly 3,300 Oceans for $46.25 million, about $14,000 per vehicle—a steep discount. What was left of Fisker would cover the costs associated with the recalls on Ocean parts and software. And at the last possible moment, the FOA and American Lease reached an informal agreement—representatives for both called it a "handshake on the courtroom steps"—that would maintain Ocean owners' access to the cloud. FOA said it would pay a total $2.5 million, to be broken into $500,000 installments over the course of five years, for access to the Ocean's code base, diagnostic codes for maintenance, and other intellectual property. The group also reportedly agreed to reimburse American Lease for some of its cloud fees with Amazon Web Services and Microsoft Azure. The New York company, meanwhile, contracted with a tech firm called Indigo Technologies to keep improving the Ocean's software. Owners would have access to those fixes for a lump-sum fee.

Almost immediately, the deal looked shaky. Indigo began pushing a big software update to Oceans around the world, but what was billed as a fix bricked some 10 percent of the Oceans that downloaded it, rendering them useless. The association said Indigo didn't respond to complaints. Still, the group paid out its first installment of $500,000. Meanwhile, American Lease had the responsibility of performing the government-mandated Ocean recalls. But owners said the company wasn't getting them done. Some went ahead and got the repairs completed themselves, then tried to send the bill to the firm. Crickets.

The spring of 2025 was the association's "Big Bang period," Fleming said at the time. It had a democratic voting structure, monthly meetings, and plans to improve Ocean software courtesy of the engineering volunteers. New members like Svein Hodne were paying the $600 to join. Still, other members weren't happy. They complained online that the organization wasn't responsive to owners' wishes and that it didn't do enough to earn members' annual fees. The volunteer car company, in other words, wasn't living up to the ambitious promise implicit to car companies: We'll keep this car running. Hundreds of members dropped out to lean on Indigo's software solution, opting to pay Indigo a monthly fee for internet connectivity instead of waiting on the FOA. Some original members began taking time away from the association. Fleming himself had just come back from a multi-month break after having what he described as a breakdown brought on by the pressures of running the association.

"Can you tell I own this car from the trail of tears down my face?"

From left: Ocean owner Quentin Stephens at a meetup in Santa Clara, California.

Fiskers at a meetup.

A new key fob, to replace a failed original.

The bank associated with Fisker finally began to process owners' buyback claims, and many wanted out. Fleming took advantage of the deal and traded in his Ocean for a new electric car from the startup Rivian—then turned around and bought another deeply discounted Ocean from a neighbor. "It's a cold, unfriendly world out there right now," he said, to explain why he wouldn't quit this terrible car. "We're having an adventure with a bunch of people."

In April 2025, the situation got colder. Bleiberg, the American Lease executive, reportedly told the association members that American Lease had spent more than $800,000 keeping their Oceans connected to the cloud. He wanted them to chip in. The association refused to pay American Lease unless it

sent a more formalized itemization of its charges. So American Lease cut the private owners, those not subscribed to its own, Indigo-led service, off from the cloud. Owners started up their cars to find they no longer had navigation or music. "We've got nothing," an Ocean owner said as he filmed himself booting up his car's infotainment system.

MONTHS LATER, I found myself in a parking lot north of San Diego for a special meetup. Some 1,000 Fisker Oceans owned by American Lease were now picking up passengers around New York, but in San Diego, I had never seen so many—17 in all—gathered in one place. Some owners said this was their passion project; others just wanted to not lose the money they had invested in the car. "Is this the Fisker owners' therapy session?" one owner shouted as he emerged from his bright blue Ocean. "Can you tell I own this car from the trail of tears on my face?"

"When I drove home from the meetup, I was welling up with tears," one Pittsburgh attendee remembered. Did he regret buying his Ocean? Kind of. "I'm not unhappy that I've done it, but I'm not pleased," he said. "The thing that's instilled happiness is what happened with the FOA."

The Fisker Owners Association had been busy. Members had built their own app for the Ocean and had plans to build and sell a device that would, in a roundabout way, give private Oceans their connectivity back. Now they were installing a software update that solved a long-standing Ocean headache: that the Fisker app no longer worked with the car. The group's new app update allowed for smoother connections and also made the cars' notorious key fobs more reliable. The problem was that the change had to be made by hand, in person, so the group had organized more than 100 meetups around the world: in Indiana, Ohio, Maine, and Maryland, as well as Ontario, Canada, and the United Kingdom. Someone in Copenhagen baked a cake with a cartoon Henrik Fisker on top. A US volunteer remotely walked Iraq's only FOA member through his own installation.

The FOA still isn't in contact with American Lease, which mostly suits executive Josh Bleiberg just fine. "There is a commercially available insured and professional service option out there for people, should they choose to take it," he says, referring to the software and connectivity solution provided by his contracted vendor, Indigo, which now costs $500 a year. "If owners want to go through the hackathon, they're going to do that." Legal issues loom: Bleiberg says American Lease is preparing to sue the FOA for breach of contract.

A few weeks after the meetups concluded, the association made an announcement: It had found a bug in its key-fob software. Volunteers would have to make the installations again.

Today, despite all the troubles, some people are even picking up used Oceans because they're excited about being part of the club. "It's like absolutely the best hobby I can ever ask for," a new owner told me. (It took his wife a bit of convincing to allow him to buy it, he admitted.)

"I want it to be my last car," an FOA volunteer told me. "I will drive it until it has no battery left."

That volunteer might get the chance. The FOA is still pushing for its own right to a Fisker Ocean IP license, which could give its crew access to the car's code and the ability to fix and even build on its software, distributing tools that would allow a wider pool of technicians to work on the car.

Meanwhile, the broader right-to-repair issues aren't resolved. Just this year, at least 33 bills that would require manufacturers to make parts and repair instructions available to consumers have been proposed in statehouses across the US. FOA members are seeing echoes of their situation everywhere. Michael Rosito, Tsunami's logistics expert, got an email this fall from Google subsidiary Nest stating that the company would no longer support the software to control his smart thermostat, which he bought nine years ago. He'll no longer be able to use an app—the system's selling point—to control the temperature in his house. "This can't be allowed to continue," he says. "Who's to say they're not going to do this again?"

If the FOA is able to win the right to Fisker's intellectual property, the deal would likely be unprecedented. Fan communities—mostly video game enthusiasts—have seized the means of production before by taking over software production after its makers abandoned it. (See: the Sega Dreamcast.) Vehicle IP has changed hands. (See: the DeLorean.) But car owners have not yet managed to wrangle, en masse, the right to keep building.

"I feel good about it," Cristian Fleming told me, in his understated way. "Every day is an adventure."

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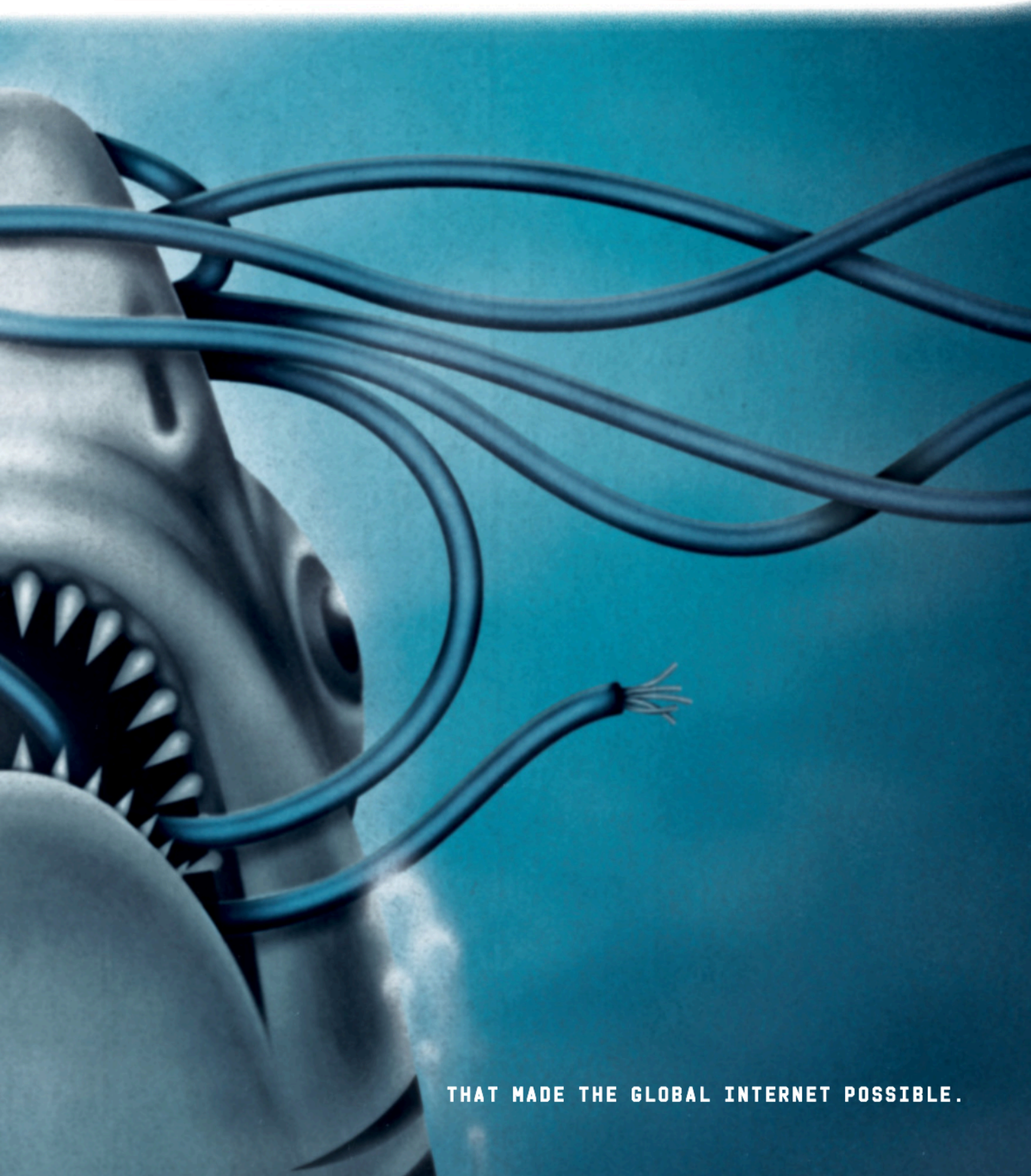


THAT MADE THE GLOBAL INTERNET POSSIBLE.

But nobody ever asks about rats, maybe because, as a friend of mine pointed out, "sharks make you cool, but rats sound like you have a problem."

Sometimes people ask about satellites or, especially in Sweden (where I live), about alleged sabotage in the Baltic Sea. But historically, shark bites have commanded the most attention. The myth began nearly 40 years ago, with the development of a subsea fiber-optic cable known as TAT-8. TAT-8 practically invented the concept of an internet cable, and now that it's ready for retirement, I spent time with the offshore workers, crew members, and engineers who are in the process of pulling it off the seabed. That's the real story of subsea cables—not sabotage or sharks, but the humans who take care of the physical stuff that keeps all of our digital communication flowing.

SHARKS ARE INNOCENT. Or at least they're not eating the internet. As a family of cartilaginous fish, sharks are collectively not guilty of most, if not all, charges of biting, chomping, chewing, or otherwise attacking the underwater network of fiber-optic cables. The people who build and maintain the nearly 600 subsea cables that carry almost all of our intercontinental traffic—supporting just about every swipe, tap, Zoom, and doomscroll anywhere on the planet—have a love-hate relationship with this myth, which has persisted for decades. They might even hate that I'm starting this piece with it.

If a cable is suspended over the seabed, a shark might gum it as it explores. Sometimes they'll lunge for a cable that's being pulled out of the water. But for a shark to actually bite a cable, you'd have to wrap it in fish, much as you'd hide a pill in a hunk of cheese for the dog. Rats can be a threat on land, because their incisors never stop growing, so they like to file them down on semisoft cables.

FIBER-OPTIC TRANSMISSION is a near-magical way of carrying information by pulses of light. Most people don't even think about how quickly we've accepted instantaneous communication as normal, even those of us who can remember when an international phone call had to be booked in advance. The more people I meet in this industry, in this network of networks of people and things, the more insulting it sounds to hear that "we" only notice it when it breaks. (Who is this "we," I always want to know?) Billions of people are able to walk around not noticing this infrastructure because of the daily work of a few thousand people, sometimes at sea, other times buried under piles of permits, surveys, and purchase orders for thousands of kilometers of cables that will join the millions of kilometers of cables on the seabed that ensure that our planet is continuously being hugged by light.

I also need to clear up something else. Most people call them "internet cables," but technically, fiber-optic transmission was developed for telephone calls. One of the people involved was an English scientist named Alec Reeves, who also spent his time working on psychokinesis and telepathy. With fiber, voices become light, pulsate across spiderweb-thin strings of glass, and become voices again in your handset on the other end. Maybe there isn't that much of a conceptual leap between that and moving things with your mind.

TAT is short for Trans-Atlantic Telephone, and TAT-8—built by AT&T, British Telecom, and France Telecom—was the eighth transoceanic system across the Atlantic. It was the first to use optical fibers to transmit traffic between Europe and the United States. Fiber optics for communication had only been worked out in theory in the 1960s, and terrestrial cables were first used in the 1970s. But using this technology to span continents was practically tantamount to human galactic expansion.

The optical fibers at the heart of TAT-8.

COURTESY OF AT&T ARCHIVES AND HISTORY CENTER

When TAT-8 went into service on December 14, 1988, the science fiction writer Isaac Asimov spoke on video link from New York to audiences in Paris and London: "Welcome everyone to this historic transatlantic crossing," he said, "this maiden voyage across the sea on a beam of light." AT&T made a TV ad, in which an earnest voice-over promised a "worldwide intelligent network" where people could send information in any format to anyone they want. Cue the montage of telephone operators: "This is the AT&T operator. You have a call booked for Poland?" "I have your call to Russia." "What city in Cuba are you calling?" If they were looking to inspire viewers, it wasn't with the promise of the internet, which was still too niche for most of us to comprehend, but with the end of the Cold War.

TAT-8 would witness the fall of the Berlin Wall, the birth of the World Wide Web, the end of the Soviet Union, the dotcom boom, the end of Tory rule in the UK and the beginning of the Bush years in the US, the September 11 attacks, the dotcom crash, and the dawn of social media (it was Friendster). Rather than being the last cable ever needed, as had originally been believed, it was full to capacity within 18 months, by which point there were other cables, like PTAT-1 across the Atlantic and TPC-3 in the Pacific. By 2001, the TAT series was up to number 14. After developing a fault that was too expensive to be worth fixing, TAT-8 was taken out of service in 2002.

It's been sitting on the seabed until now.

TAT-8 IS CURRENTLY being pulled up and sent for recycling by Subsea Environmental Services, one of only three companies in the world that's made cable recovery and recycling its entire business. Cable companies sometimes recover their own cables after they take them out of service, and some retired cables get new life in scientific research or military use, but most of them—most of the 2 million kilometers of it all—are still right where their former owners left them. The seabed is a lot busier than you might think, so these operations are clearing space for new cables, along routes that are proven and efficient, rather than disturbing new sections of the seafloor. And there's good money in old cables if you know what you're doing.

It's after midnight on a cool August night, and my friend Fiona Marron—here to take photos and videos—and I are watching Subsea's brand-new diesel-electric cable recovery vessel, the MV *Maasvliet*, dock in the Portuguese port of Leixões, just outside of Porto. The 14 people on board are two weeks overdue because hurricane season arrived early, and they had to dodge storms Dexter and Erin, which meant they collected more stress and less cable than expected. During the next week or so, they'll offload 1,012 kilometers of TAT-8, resupply the ship, then set out again to pick up another load.

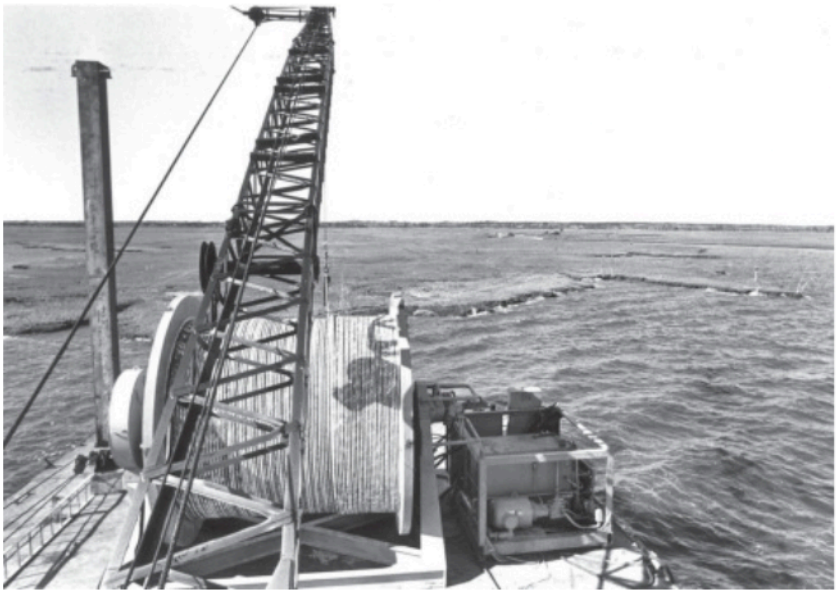
They drop the gangway, and there are hugs between the crew and Peter Appleby, operations manager from Subsea. Up on the bridge, we meet Captain Alex Ivanov, who has been at sea for 30 years and still takes pictures of sunsets. He scrolls through his phone to show Peter a blazing red and orange sky, then photos of some of the dorado he caught, because when cable ship people aren't fishing for cable, some of them go fishing for fish.

Peter asks how Alex likes the ship. Alex helped design it, and this is only its fourth trip out since it left dry dock in January 2025. The captain says he loves the diesel electric—the *Maasvliet* runs on three industrial Volvo truck engines—even though he says it isn't as stable as the *Rebecca*, the company's other vessel. The bridge is high-tech and modern, but everything is touchscreens and sensors, and he says if he loses power, he loses everything. Then he zips off, getting ready for tomorrow, when he'll hand charge of the ship over to another captain, Vlad. Vlad will show up wearing a new T-shirt

↑ **The MV *Maasvliet* docks in Portugal to offload recovered fiber-optic cable.**

A view of the monitor in the ship's control area.

Captain's controls on the *Maasvliet*.



that says "Everything can go wrong at sea" on the front and "Not on my fucking watch!" on the back.

Everyone who has been at sea will tell you that the most important people are the captain and the cook, and all good captains are servant leaders and will concede that the cook is more valuable. Crew members are from Ukraine, Russia, Poland, Nigeria, and Kenya, and the cook knows everyone's comfort foods. Misha, the cook who's now rotating out, heard one of the crew talking about how much he loved khinkali, Georgian soup dumplings, and the next Sunday they were on the tables. Peter always brings cottage cheese, cream cheese, and cabbage when he meets a ship in port. I'm suddenly aware that I'm not just a guest on a ship, I'm a middle-aged mom who has shown up at someone's home without snacks or a host gift. Fiona and I are also the first strangers any of these people have seen in two and a half months.

I'M HERE IN Leixões because I'm a researcher in the material culture of the subsea cable industry, and I consider it my business to help people understand that the networks we rely on are made of physical things, created and maintained by people, so that we can stop saying infrastructure is invisible as if the people are invisible too.

Another way to irritate a cable nerd is to suggest that low-Earth-orbit satellites—which are unreliable in bad weather, are harder to repair, and need to be replaced every five years—will one day be our main source of connectivity. Satellites are still an important component for resilient physical infrastructure, especially in areas with few or no fiber connections, but they haven't been able to compete on capacity since the 1990s.

Back in the 1970s, though, satellite technology seemed so promising that the Federal Communications Commission made it clear to AT&T: If you don't do something revolutionary with cables, we're not going to grant permission for any more intercontinental submarine connections. At the time, cables relied on copper, and there's only so much capacity you can cram into a bundle of wires. So, in 1978, Bell Labs, along with

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its British counterpart, STC, committed to installing a nearly 6,000-kilometer-long submarine fiber connection between the US, UK, and France. In Holmdel, New Jersey, Bell Labs began testing out cables, and in 1985 the company deployed its first live test system, known as Optican-1, between two of the Canary Islands. Optican-1 worked, but it had a series of what are called shunt faults, where damage to the insulation interrupts the electrical signals.

Now, here come the sharks. Elaine Stafford was the project manager for Optican-1. In 1986, she was a rare young woman on the scene, on her way to Paris to present an update on the cable at the first of what would become the industry's main research and development conference. "I'm supposed to be giving this huge talk, that there's this wonderful technology and it's working fine, and it's going into service, but we had this big question mark," she recalls. They didn't know what had caused the faults.

Jack Sipress, who in Stafford's recollection was two levels above her at Bell Labs, got on the bus to the conference center. "And he says, 'I have the shark teeth,'" Stafford tells me. "He pulls them out and says, 'These were pulled out of the faulted cable.' So we went to the conference and announced to the world that it was shark teeth." AT&T even included four pages about shark-bite mitigation in its 36-page press kit for TAT-8.

To be clear, there still isn't consensus that the sharks caused the shunt fault. Sipress wasn't lying about the teeth, but it's hard to know what really happened. Stewart Ash, who was part of the UK team at STC, insists that most shark claims really are false. If the Optican-1 was installed with too little slack, though, and hung above the seafloor in some areas, a shark might've munched down. "While we at STC didn't believe it," he says, "we were swept up in the frustration or fear that sharks could interrupt these very important, brand-new cables."

To be absolutely sure, AT&T funded research at two aquariums: in Mystic, Connecticut, and Sarasota, Florida, where researchers let some dogfish and lemon sharks get a little hungry and then tested to see if they bit any of several different cables that were emitting electrical fields in different patterns. They didn't, except in seemingly random cases. (To be certain about this myself, I took my shark-obsessed 5-year-old to a local aquarium, where we spent 15 minutes trying to figure out how a friendly 3-foot dogfish, whose mouth looks like the coin slot of an old pay phone, could do more than give a cable a soft boop.) Experts also went out into the ocean and pulled different species of sharks onto the deck to force-feed them sections of cable. Sometimes they bit—wouldn't you? But there was absolutely no pattern.

Still, in the 1980s, despite there being no firm evidence that sharks were attracted to anything specific about the cables, the teams decided it wouldn't hurt to build TAT-8 with a layer of steel between the polyethylene insulation and the fibers. They sent shark teeth to the NYU School of Dentistry, to have molds made and mounted onto shark jaw simulators, which then chomped on sections of cable. The result was that lightweight deep-sea fiber was produced, from the start, with what they called "fish bite protection," which helps against abrasions and other types of everyday damage that can happen in the sea. Turns out, we owe sharks a thank-you, and probably an apology for the force-feeding.

← AT&T's original cable-laying operations in the 1980s.

IT'S MORNING IN Leixões. On the deck of the *Maasvliet*, I hover over a pile of TAT-8's repeaters. A long-haul submarine telecommunications cable needs repeaters to boost the optical signal to cross the distance, and TAT-8 had more than 100 of them, each encased in a watertight, pressure-tested housing that could survive up to 8,000 meters down. A rubberized cone stretches from each side of the repeater, sheathing the cable, making the whole piece about 2 meters long. In a pile, they look like a dead kraken, ready for one last writhe on the dewy deck.

Repeaters weigh about 400 kilograms. It takes three people to pull one out of the water, cut it free from the cable, and slide it down a special ramp onto the deck. The rubber casings are stamped with the dates when each one rolled off the line—July 27, 1987; December 23, 1987; February 19, 1988; and so on—and there are identification numbers and instructions painted on them. Human hands painted the casings before they went into the water 38 years ago, and it's humans who pull them out, also with their hands.

Everything about the cable recovery operation needs to be learned on the job, from somebody who

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carries the knowledge in their body. A lot of the new crew relies on Stephen, who has chosen to stay at the position of coiler, the rank of ordinary seaman, rather than rising up the ranks as many of the others have. He's been with Subsea for 15 years, since the company started, and he trains everyone. He loves the teamwork and wouldn't dream of going onto a cargo ship—too much waiting around.

At sea, it's part of a coiler's job to stand in the cable tanks in the ship's hold and grab the cable as it comes through the hatch from the deck above. You grasp it, and as the ship tosses, you walk backward in slow circles to coil the cable in a neat stack, because fiber cable has to be coiled by hand. You need to keep it tight, and you don't want to break the cable. It's hard to get used to, Stephen says, because you get dizzy. Another coiler describes the shifts as 14 cigarettes long. Eight hours divided into half-hour blocks so you don't get too woozy: 30 minutes on, 30 minutes off, up the ladder for two cigarettes.

Peter, the operations manager, hands two pairs of utility gloves to Fiona and me. Do we want to go into the hold? Fiona says yes instantly. I take longer. It's 10 meters down a vertical ladder, but I didn't travel here to just stand at the top of a ladder and shout "What's it like down there?"

The ship's hold has five cable tanks, each about half full. Most people are surprised when they see how small a submarine telecommunications cable is, but even those are usually the black and yellow steel-armored portions used in shallow water. This cable, from the deep-sea sections, is the diameter of a taper candle, and it looks like giant cooked spaghetti. I try to imagine being in here when it's 30 degrees Celsius, the ship tossing up and down, and trying to walk in slow, backward circles.

Now I want to know how the cable gets from the seabed into the hold in the first place. Stephen, again, is the person to ask. He turns down the music—a mix of Ukrainian techno, American classic rock, and a medium dose of death metal—to tell me about what everyone here seems to agree is the most exciting part of cable recovery: catching the cable.

First, you sail to the spot where you're pretty sure your cable is. They have a route positioning list, a spreadsheet that shows the precise coordinates of every joint, splice, and repair—along with who did it. They know where the cable has been plow-buried, where and exactly when a repeater was laid, and the type of cable at every section: double-armored, single-armored, lightweight-armored (the contemporary name for the "fish-bite-proofed" cables). To take the cable off the seabed, all you get is a hook, a rope, those coordinates, and your senses.

↖ **TAT-8 cable joints strapped to the deck of the *Maasvliet*.**

↑ **One of the carousels that spin the cable into bales.**

→ **Captains Vlad and Alex aboard the *Maasvliet*.**

It's roughly the same method they used in the 19th century when they needed to recover failed telegraph cables from the deep sea.

A flat grapnel hook, known as a "flatfish," is dropped off the bow. It falls past blobfish, anglerfish, the giant versions of crab and octopus, and below the deepest-dwelling sharks, down where fish have antifreeze for blood and names like "fangtooth" and "faceless fish." "When it touches the bottom," Stephen says, "we stop." They have to keep the hook flat on the bottom, so they can start what they call the cutting run, sailing slowly toward the cable, at a speed of about 1 knot, dragging the flatfish. "The speed matters," he says. "When we get to the position, we slow down to keep it from flying or dancing." Everything Stephen tells me sounds like trying to fly a kite in space, except this is all done on the deck of a ship, with ocean swells sometimes over 3 meters—if the swells hit 4, it's too harsh to work.

Once the hook is in place, you have one job: Keep your eye on the line, watch for a bite. Someone spots tension in the rope, or the winch makes a move. Whoever sees it calls out. Sometimes it's been three hours, sometimes 24, of rope-dropping and winch-watching. They cut, pull, start the bow roller and winch, and wait to find out if the flatfish has the right catch. I repeat a question Fiona has been asking everyone: Do you cheer when you catch it? Of course they do.

Captain Alex has been working with Subsea since its early days. "In the beginning, I didn't have any idea how to capture the cable on the ocean floor and bring it on board," he says. Cables weren't laid to be picked up again. "Sometimes it's difficult to find. The cable can shift from its initial position or be blocked by gravel or sand." They're still figuring it all out. As Subsea cofounder John Theodoracopulos puts it: "I liken a lot of what we do to cleaning up space junk or all the oxygen bottles that are left at base camp at Everest."

Now that I've seen all the planning and experience that goes into an operation to find and recover a cable, it's even harder to take seriously the idea that enemy saboteurs are regularly pulling this off. A more legitimate concern is disturbing the seabed, but researchers at the UK's National Oceanography Center have started looking into the environmental impact of decommissioning, and it's not as much as you might think. The biggest impact seems to come from grapnel runs and from the vessels themselves. Very few cables in service today cross sensitive ocean habitats. Where that's the case, they leave those segments in place. They also only recover cable that's sitting on the surface of the seabed, and they know exactly where it all is because of that spreadsheet. Cables don't even tend to attract sea life colonization very often. The "reef effect" makes a cool story, but it seems that, just like sharks, most sea life is just not that into cables.

DEPARTING CREW MEMBERS are starting to say their goodbyes. Captain Vlad is passing out nuts and chocolate; Alex will do the formal handover later today. Chief engineer Sergei is just about done with the maintenance work needed to hand over to the next chief engineer, also named Sergei. He barrels through the bridge, beelining to the "good" coffee machine. "This coffee machine is my wife!" he shouts. He's from Crimea, and he's been a seaman on and off since he was 16. It's his hobby, the best job in the world.

In a few days, the cable tanks will be empty. Next, a cargo ship will arrive. The bales will be loaded "break-bulk," as it's called—directly into the hold, the way it was done before containerization—and brought to South Africa, to Mertech Marine, which also specializes in cable recovery, which Theodoracopulos tells me is a "collegial competitor." Mertech is the only cable salvage company with a recycling facility of its own. It will break the cables down: steel, copper, two kinds of polyethylene.

Fiber was the successor to copper, but that's just the transmission part. Fiber-optic cables still have plenty of copper in them, and it's of especially high quality. The International Energy Agency says we'll be running short of copper within a decade if the manufacturing world can't find more of it, so thousands of kilometers of it is nothing to sniff at. The fiber itself is just about the only part of the cable that doesn't make sense to recycle, but there's lots of steel, and that will become things like game and vineyard fencing. Polyethylene is one of the easiest plastics to recycle, and that will be sent to a facility in the Netherlands, where it will be turned into pellets that can be used for non-food-grade plastics. By the time you read this, you could be squeezing your shampoo from the remnants of the first fiber-optic cable that crossed the Atlantic, most of which spent 38 years deeper in the sea than the Greenland shark, which is known for being centuries old and extremely sleepy.

And what about the rest of what went into the TAT fiber systems? Bell Labs was eventually sold to the French company Alcatel, which closed the Holmdel facility in 2006. It spent close to a decade as the largest empty office building in America and is now

SOME OF THE TAT-8 PEOPLE ARE STILL AROUND BECAUSE THERE ARE TWO THINGS THAT KEEP PEOPLE IN THE SUBSEA BUSINESS: THEY LIKE PEOPLE, AND THEY LOVE MESSY PROBLEMS.

Peter in one of the cable tanks in the ship's hold.

Rope, ready to be lowered into the ocean to recover cable.

a mixed-use complex called Bell Works, although it's probably most recognizable as the headquarters of Lumon Enterprises in the Apple TV show *Severance*. The current owners found 18 kilometers of subsea fiber from an early sea trial for TAT-8 in the basement, and they commissioned an architecture firm to come up with ideas for what to do with it, among them a giant slinky. No one has used the old Ocean Simulation Lab for a production set, but you can also rent that—on a production location website, you'll find it labeled a "mad scientist's lair."

Some of the TAT-8 people are still around because there are two things that keep people in the subsea business: They like people, and they love messy problems. "Even way back then," says Stafford, the Optican-1 project manager, "it was connecting the world, doing things right, doing things well." The contrast between this world and what's happening at the application layer isn't lost on me. And the shark research makes a lot more sense—they had a big bet, a blank check, and an almost heroic sense of pride in their work that drove them to go down even vanishingly small rabbit holes.

I suppose there's a third reason a lot of the people are still around: Most people in this tiny industry are Generation X or older, and sometimes they cart around so much institutional knowledge that they can't retire. Stafford is near retirement age, and the guy who introduced me to her, Jean Devos, got his start making telegraph cables in the north of France in 1961 and still works as an adviser. He's 87. The first thing Stafford said to me on Zoom was, "How is he? Does he look well?" The subsea world has been trying to recruit and train younger talent for at least the past decade, so the industry vets can get their rest.

Now it's my turn to leave, so I'm climbing around the ship, saying my goodbyes, having a few last chats in the smoking area outside the crew quarters—where everyone is when they aren't working. I was promised a small piece of TAT-8, and now I have it. Before I get to the airport, I wrap my cable bundle in a shirtdress and pack it in my carry-on, a little panicked as I realize it looks a lot like a bundle of dynamite. The Subsea guys also gave me a branded baseball cap, which has a stylized cross-section of submarine cable on it. I put it on in the airport, in case it can answer questions about what's in my bag. Except, how many people know what subsea cables look like? And you can't wear a hat through security, so it goes into the bucket. Nobody asks any questions.

JANE RUFFINO *is a writer and UX architect based in Stockholm. She is pursuing a PhD on the contemporary archaeology of the undersea fiber-optic cable network.*

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Critical resources that helped get this issue out:

Day care and avocados; Hu dark chocolate bars; Nerds Gummy Clusters for $2.99; a large stash of Spezzatina licorice hard candy from Calabria, Italy; tiny bottles of Fireball shooters for the ski lift; episodes of *Judy Justice; Ink Master; The Amazing Race; Reality Check: Inside America's Next Top Model; Drug Story With Thomas Goetz* podcast; Bull-penis chew toys for new puppy; a good emergency veterinarian; Aritzia Cozy Sweatfleece; surprise bags from the Too Good to Go app; classical music to keep my brain sane; Spotify playlist of hip-hop music from 2005; *Roadside Picnic*, by Arkady Strugatsky and Boris Strugatsky; *Parerga and Paralipomena*, by Arthur Schopenhauer; *The De Malo of Thomas Aquinas*; Russian poetry; Sunday dinners with the family to stave off feelings of impending doom.

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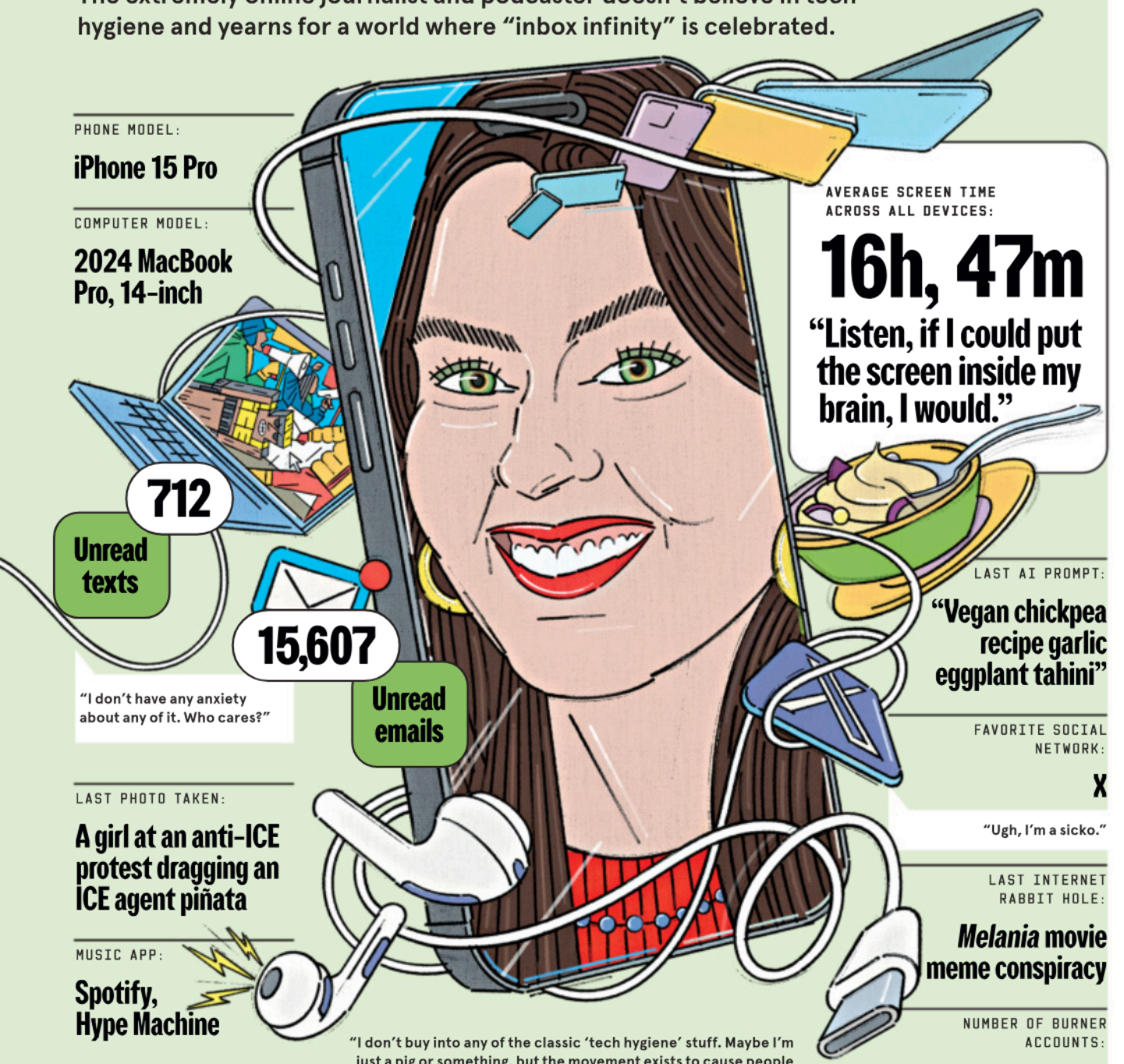
THE BRAIN-ROTTING DIGITAL DIET OF TAYLOR LORENZ

The extremely online journalist and podcaster doesn't believe in tech hygiene and yearns for a world where "inbox infinity" is celebrated.



PHONE MODEL:

iPhone 15 Pro

COMPUTER MODEL:

2024 MacBook Pro, 14-inch

AVERAGE SCREEN TIME ACROSS ALL DEVICES:

16h, 47m

"Listen, if I could put the screen inside my brain, I would."

712

Unread texts

15,607

Unread emails

"I don't have any anxiety about any of it. Who cares?"

LAST AI PROMPT:

"Vegan chickpea recipe garlic eggplant tahini"

FAVORITE SOCIAL NETWORK:

X

"Ugh, I'm a sicko."

LAST PHOTO TAKEN:

A girl at an anti-ICE protest dragging an ICE agent piñata

LAST INTERNET RABBIT HOLE:

***Melania* movie meme conspiracy**

MUSIC APP:

Spotify, Hype Machine

NUMBER OF BURNER ACCOUNTS:

Unknown

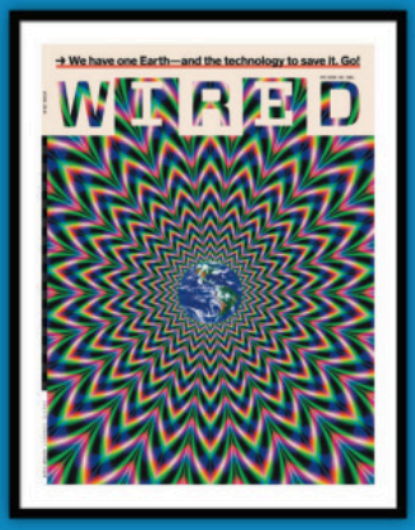
"I just make them all the time."

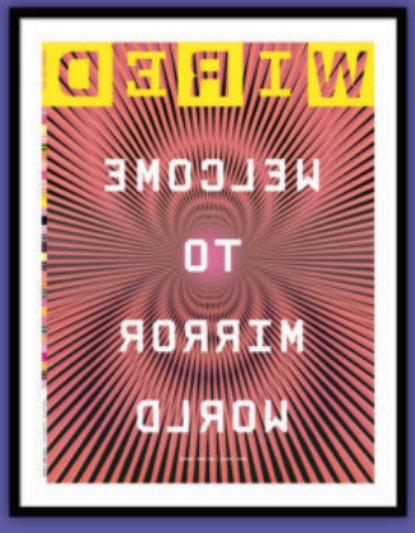
"I don't buy into any of the classic 'tech hygiene' stuff. Maybe I'm just a pig or something, but the movement exists to cause people stress and anxiety. And I think you just have to relax a little bit and not think about it. But I do try to be good about privacy. I don't post certain things, but overall, just have a secure password. Everything else, don't stress about it. Everyone has our data anyway."

For more tech lives of the rich and famous, go to WIRED.com/tag/user-behavior.

AS TOLD TO ALANA HOPE LEVINSON / FEATURES EDITOR | ILLUSTRATION BY ÒSCAR CLIMENT OLLET

GETTY IMAGES





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